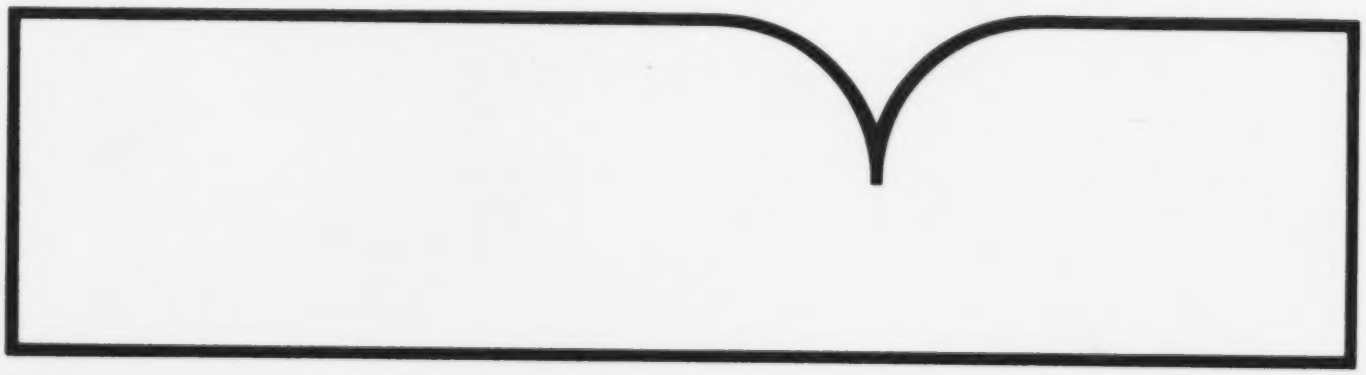
PB86-224888

Superfund Record of Decision (EPA Region 6)
Cecil Lindsey Site
Newport, Arkansas, April 1986

(U.S.) Environmental Protection Agency
Washington, DC

23 Apr 86



U.S. Department of Commerce
National Technical Information Service
NTIS

United States
Environmental Protection
Agency

Office of
Emergency and
Remedial Response

EPA/ROD/R06-86/009
April 1986

PB86-224888

EPA

Superfund Record of Decision:

Cecil Lindsey, AR

REPRODUCED BY
NATIONAL TECHNICAL
INFORMATION SERVICE
U.S. DEPARTMENT OF COMMERCE
SPRINGFIELD, VA. 22161

TECHNICAL REPORT DATA
(Please read Instructions on the reverse before completing)

1. REPORT NO.	2.	3. RECIPIENT'S ACCESSION NO.
EPA/ROD/R06-86/009		PB86 224888/AS

4. TITLE AND SUBTITLE	5. REPORT DATE
SUPERFUND RECORD OF DECISION Cecil Lindsey, AR	April 23, 1985
	6. PERFORMING ORGANIZATION CODE
7. AUTHOR(S)	8. PERFORMING ORGANIZATION REPORT NO
9. PERFORMING ORGANIZATION NAME AND ADDRESS Same as box 12.	10. PROGRAM ELEMENT NO. 11. CONTRACT/GRANT NO.
12. SPONSORING AGENCY NAME AND ADDRESS U.S. Environmental Protection Agency 401 M Street, S.W. Washington, D.C. 20460	13. TYPE OF REPORT AND PERIOD COVERED Final ROD Report 14. SPONSORING AGENCY CODE 800/00

15. SUPPLEMENTARY NOTES

16. ABSTRACT

The Cecil Lindsey site consists of 5.2 acres, located in rural northeastern Arkansas, approximately 3.5 miles northeast of the city of Newport. Cecil Lindsey accepted waste for salvage and/or disposal from the early 1970s until 1980. The site was first used as a salvage operation, where machinery, automobiles, culvert pipe, and other scrap metal were collected. The southern portion of the site was formerly used to raise pigs and contains a fenced area, an open shed, and a sandpoint well. Later, the northern part of the site was used as a municipal dump by the community of Diaz, located approximately 2 miles to the west. The Cecil Lindsey site was also reportedly used for the disposal of industrial waste. Several local companies may have used the site, but the type and extent of industrial waste disposal is not well documented. The results of the field investigation indicate the presence of very limited onsite soil and ground water contamination and offsite surface water and sediment contamination. Onsite soil samples showed low inorganic concentrations which exceed background levels scattered throughout the site and also isolated volatile organic contamination. In addition, onsite ground water samples consistently exceeded background concentrations for inorganics, but the onsite volatile organic contamination is limited.

The results of the field investigations have indicated that the low levels of contamination at the Cecil Lindsey site do not create a significant danger to present

(See Attached Sheet)

17. KEY WORDS AND DOCUMENT ANALYSIS

a. DESCRIPTORS	b. IDENTIFIERS/OPEN ENDED TERMS	c. COSATI Field/Group
Record of Decision Cecil Lindsey, AR Contaminated Media: gw, sediments, soil, sw Key contaminants: inorganics, VOCs		

18. DISTRIBUTION STATEMENT	19. SECURITY CLASS (This Report) None	21. NO. OF PAGES 61
	20. SECURITY CLASS (This page) None	22. PRICE

EPA Form 2220-1 (Rev. 4-77) PREVIOUS EDITION IS OBSOLETE

EPA/ROD/R06-86/009
Cecil Lindsey, AR

16. ABSTRACT (continued)

or future public health or the environment. The selected remedial action for this site consists of a no action alternative, with: imposition of site access restrictions; installation of 2 monitoring wells; one year of ground water monitoring and removal and disposal of site drums that contain hazardous substances. Total capital cost for these actions is estimated to be $61,000 with O&M costs approximately $10,000 for one year of ground water monitoring.

Record of Decision
Remedial Alternative Selection

SITE: Cecil Lindsey Site, Newport, Arkansas

DOCUMENTS REVIEWED

I am basing my decision primarily on the following documents describing the analysis of cost-effectiveness of remedial alternatives for the Cecil Lindsey Site.

- Cecil Lindsey Remedial Investigation, December 27, 1985.
- Cecil Lindsey Feasibility Study, December 11, 1985.
- Summary of Remedial Alternative Selection, May 1986.
- Community Relations Responsiveness Summary.
- Staff briefing papers/summaries and recommendations.

DESCRIPTION OF SELECTED REMEDY

Limited action alternative:

- Site access restrictions.
- Installation of 2 monitoring wells.
- 1 year of groundwater monitoring (16 onsite wells to be sampled).
- Remove/dispose of containerized wastes.

The site will be delisted from the NPL if no significant contamination is detected during groundwater monitoring.

DECLARATIONS

Consistent with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), and the National Contingency Plan (40 CFR Part 300), I have determined that the limited action remedy described above for implementation at the Cecil Lindsey Site is a cost-effective remedy that provides adequate protection of public health, welfare, and the environment. The State of Arkansas has been consulted and agrees with the approved remedy.

I have also determined that the action being taken is appropriate when balanced against the availability of Trust Fund monies for use at other sites. In addition, the offsite transport and disposal of site drums that contain hazardous substances is more cost-effective than other remedial actions and is considered necessary to protect public health and the environment.

4. 23. 1986
Date

Frances E. Phillips
Regional Administrator

SUMMARY OF REMEDIAL ALTERNATIVE SELECTION

CECIL LINDSEY SUPERFUND SITE

NEWPORT, ARKANSAS

APRIL, 1986

U.S. EPA, Region VI
ALONM Remedial Section
Superfund Program Branch
Hazardous Waste Management Division

TABLE OF CONTENTS

SITE LOCATION AND DESCRIPTION 1

SITE HISTORY 1

CURRENT SITE STATUS 4

ENFORCEMENT 18

ALTERNATIVE EVALUATION 18

COMMUNITY RELATIONS 25

CONSISTENCY WITH OTHER ENVIRONMENTAL LAWS 25

RECOMMENDED ALTERNATIVE 31

OPERATION AND MAINTENANCE 33

SCHEDULE 33

FUTURE ACTIONS 33

APPENDIX A - CDC HEALTH ASSESSMENT

APPENDIX B - COMMUNITY RELATIONS RESPONSIVENESS SUMMARY

APPENDIX C - LETTER OF CONCURRENCE FROM ADPCE

SUMMARY OF REMEDIAL ALTERNATIVE SELECTION

CECIL LINDSEY SITE
Newport, Arkansas

SITE LOCATION AND DESCRIPTION

The Cecil Lindsey site, located in rural northeastern Arkansas, received both municipal and industrial wastes in the 1970's. Currently the dump is abandoned and overgrown. Approximately 100 barrels exist on site, some partially buried, others at the surface; all in varying states of degradation. Many of barrels are rusted, empty shells, whereas others appear to contain liquid residuals. It is not known how many contain hazardous substances.

The 5.2-acre site, owned by Cecil Lindsey, is approximately 3-1/2 miles northeast of Newport, just south of State Highway 18 (Figure 1). The site is bordered to the north and east by a wetland/ forested bottomland along Village Creek. A dirt farm road defines the southern and western boundaries of the site. Southeast of the site is a cultivated field owned by Mr. Lindsey which is planted alternately in wheat and soy beans. The topography in the area is generally very flat, and the site is within the 10 year floodplain of Village Creek.

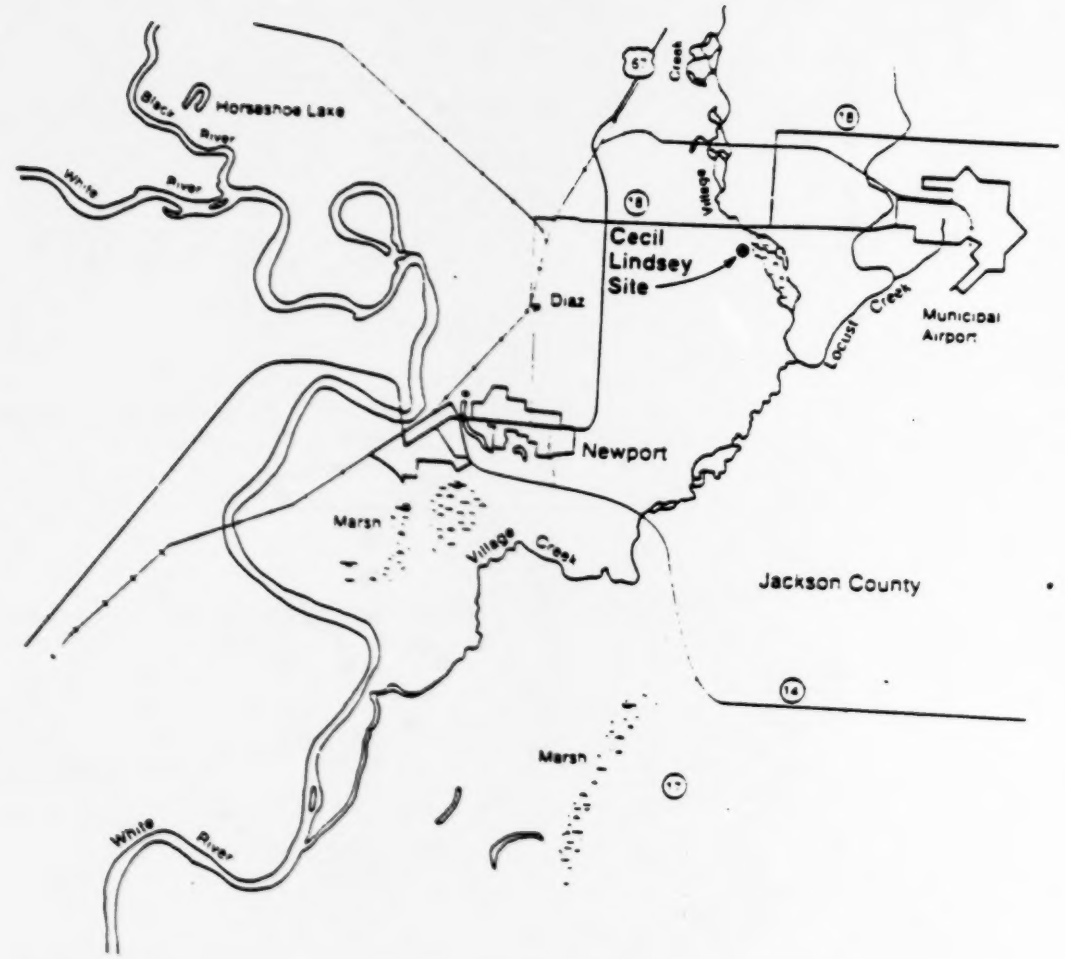
There are approximately 50 residents within a one-mile radius of the Cecil Lindsey site. Since Village Creek acts as a groundwater sink in the area of the site, all are upstream and upgradient of the site. Locations are shown on Figure 2.

SITE HISTORY

Cecil Lindsey accepted waste for salvage and/or disposal from the early 1970's to about 1980. The site has been referred to as both "The Cecil Lindsey Dump" and "The Diaz Dump". The site was first used as a salvage operation, where machinery, automobiles, culvert pipe, and other scrap metal were collected. The southern portion of the site was formerly used to raise pigs and contains a fenced area, an open shed, and a sandpoint well. Later, the northern part of the site was used as a municipal dump by the community of Diaz, located approximately 2 miles to the west.

The Cecil Lindsey site was also reportedly used for the disposal of industrial waste. Several local companies may have used the site. The type and extent of industrial waste disposal is not well documented.

The Arkansas Department of Pollution Control and Ecology (ADPC&E) inspected the site in April, 1979. At that time Cecil Lindsey was advised that his operation was not in compliance with the State Solid Waste Disposal Code and Act 237. The site was closed in 1980.



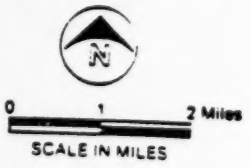


FIGURE 1
SITE LOCATION MAP
CECIL LINDSEY

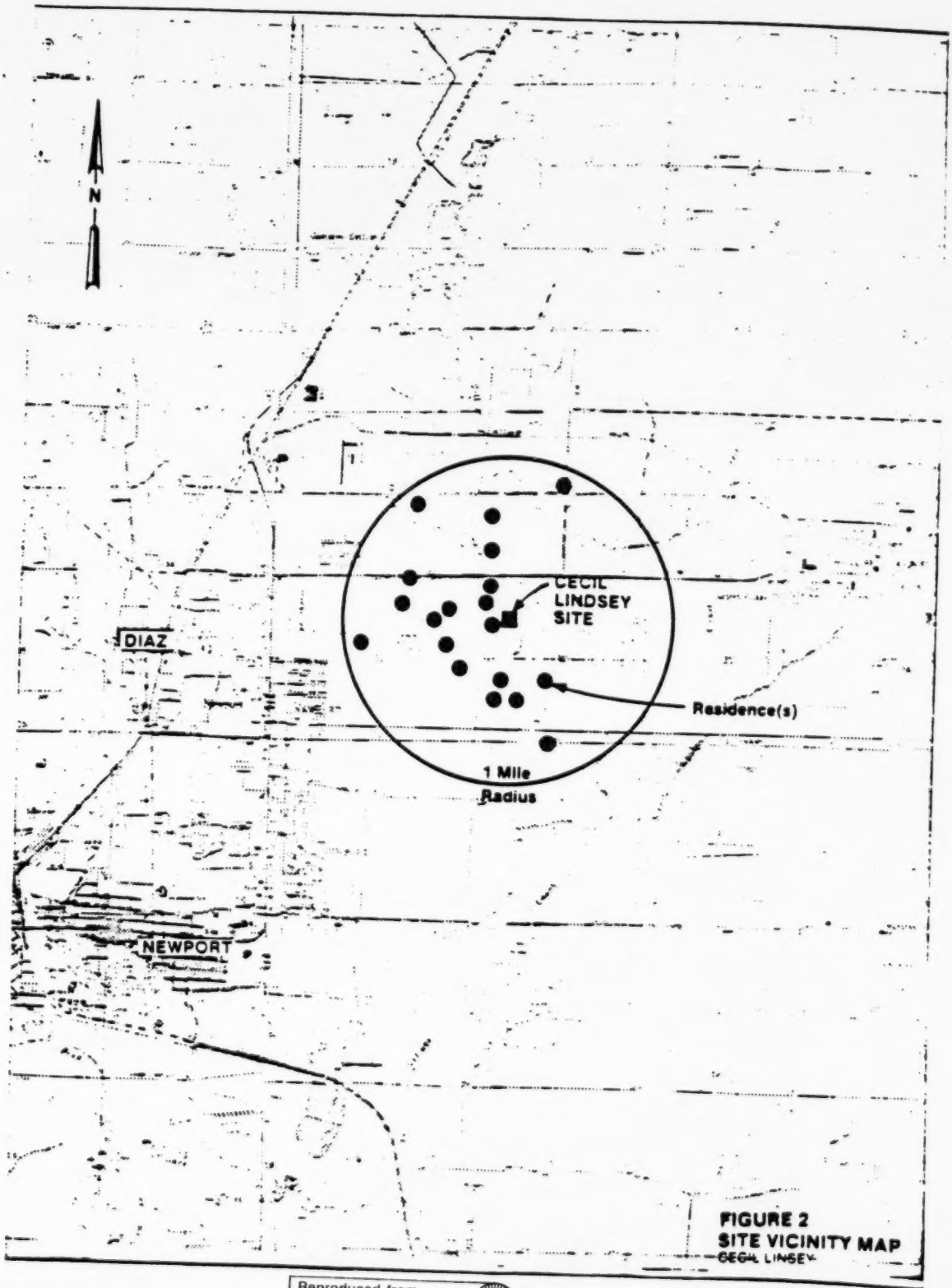


FIGURE 2
SITE VICINITY MAP
CECIL LINSEY

Reproduced from
best available copy.

In the spring of 1980, the EPA completed its first Potential Hazardous Waste Site Identification and Preliminary Assessment for the Cecil Lindsey site. Potential problems identified at that time included contamination of groundwater and surface water and leaking containers.

In March and April of 1980, the ADPCE sent certified letters to several companies suspected of using the site for disposal of industrial wastes, requesting information on any wastes that could be toxic or hazardous.

Replies indicated that wastes included sludges, metal fines, milling lubricants, paints and nonhalogenated solvents.

The Enforcement Branch of ADPCE inspected the site again in December 1980. The inspectors described some of the waste contained on the site, including drums containing a glue or resin, a sandy-textured filter material with an oil/grease odor, and waste cardboard.

On July 13, 1982, the Region VI Field Investigation Team (FIT) conducted a reconnaissance inspection of the Cecil Lindsey Site. In their Site Inspection Report, the team recommended that a sampling inspection be conducted.

In August 1982, the EPA evaluated the site and it was placed on the NPL, making it eligible for investigation and remediation under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA).

Phase I of the Remedial Investigation was initiated in July 1984 and supplemental sampling was conducted in February 1985. The RI/FS was finalized in December 1985.

CURRENT SITE STATUS

The site is currently overgrown and is visually innocuous. There are approximately 100 drums onsite, either partially buried or in full view; all are in varying states of degradation. There are other miscellaneous wastes scattered throughout the site. The results of the field investigation indicate the presence of very limited onsite soil and groundwater contamination and offsite surface water (Village Creek) and sediment contamination.

Onsite soil samples showed low inorganic concentrations which exceed background levels scattered throughout the site and also isolated volatile organic contamination. There is no consistent contamination pattern except for dike soils (inorganics) and for soils in the area of monitoring wells 5 and 8 (volatile organics). (Figure 3)

Although onsite groundwater samples consistently exceed background concentrations for the inorganics, the onsite volatile organic contamination is limited to relatively low levels in the area of monitoring wells 5 and 8. In Village Creek, surface water and sediment samples have some of the same inorganics as observed in onsite soil samples, although at much lower concentrations.

Reproduced from
best available copy.

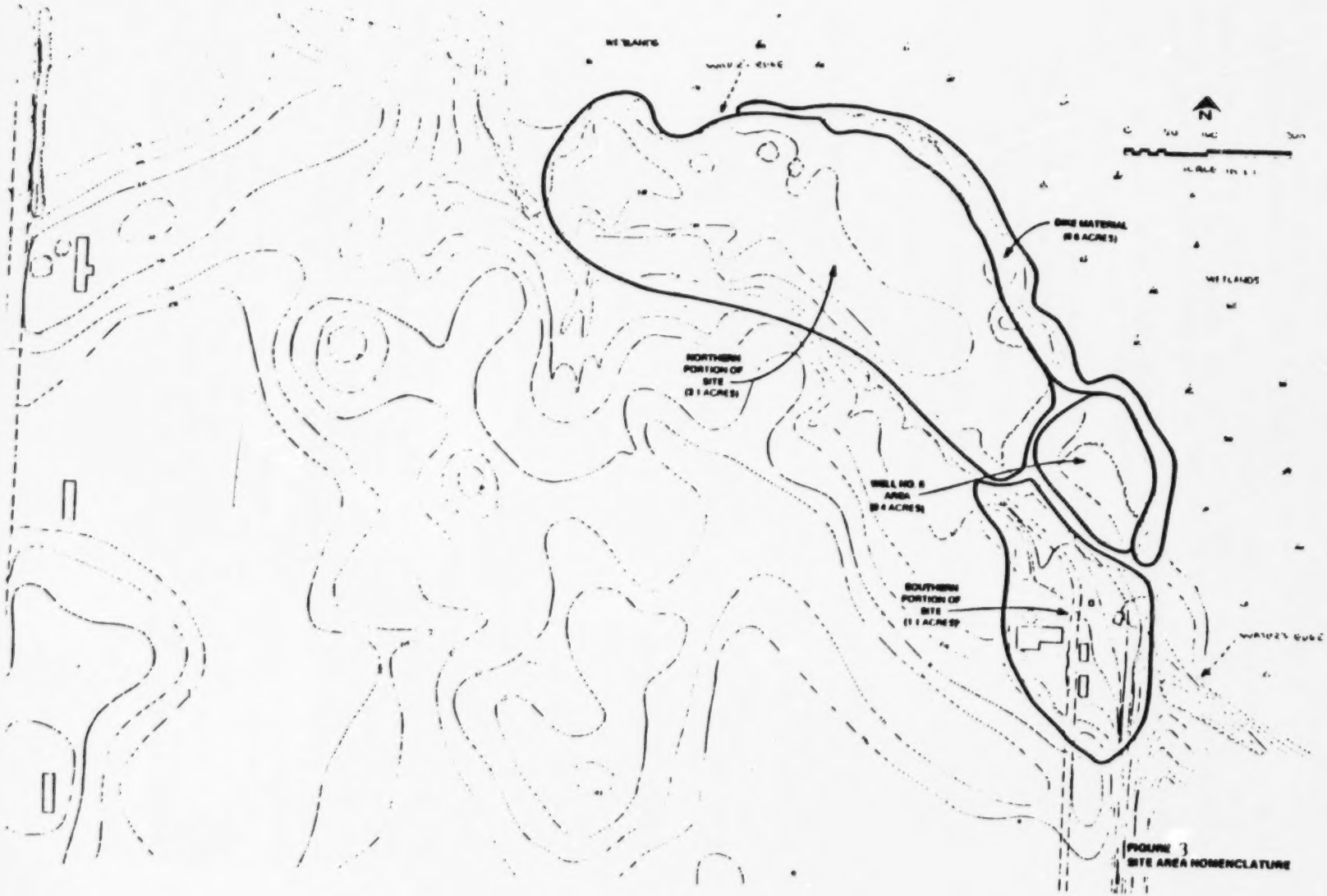


FIGURE 3
SITE AREA NOMENCLATURE

Existing background contaminant concentrations are due in part to both the natural geologic setting and also past and present land use. The presence of pesticides is expected because of local farming. Background concentrations are not considered to be caused by the Cecil Lindsey site.

To assess the health impact of the onsite contaminant concentrations, a comparison was made with existing standards for each contaminant. (Tables 1-4 list the contaminants identified, their maximum and mean concentrations detected both on and offsite, and also applicable standards. The maximum concentrations given indicate the highest value detected in the particular media for that specific compound considering all samples taken. The mean concentrations are an average for the specific media and compound.):

Groundwater - Degree of Contamination

As shown in Table 1, no primary drinking water standards are exceeded in any onsite groundwater samples. Offsite background groundwater samples, however, exceed primary drinking water standards for total chromium, lead, and lindane. The exceedences are for maximum concentrations only and are not thought to present any significant health impact. The background concentrations, as stated earlier, are not a result of the site but of past and present land use. Secondary drinking water standards (which have no health implications) are exceeded for iron and manganese in both the average and maximum concentrations for onsite and background groundwaters.

Recommended Maximum Contaminant Levels (RMCL's) have been promulgated for some Volatile Organic Compounds (VOC's) but no Maximum Contaminant Levels (MCL's) have been promulgated. (RMCL's are not enforceable whereas MCL's are.) The promulgated RMCL's have been set at zero for selected carcinogenic volatile organic compounds. This zero level is only exceeded by trichloroethene (TCE), tetrachloroethene (TTCE), vinyl chloride, and benzene in onsite groundwater samples. (Vinyl chloride only exceeds the RMCL based on the maximum concentrations found onsite.) Two contaminants, TTCE and vinyl chloride also exceed Ambient Water Quality Criteria (AWQC) for human health.

No pesticides or PCB's were found in onsite groundwater samples. Offsite background concentrations of pesticides exceed AWQC for human health and aquatic life for those contaminants for which criteria have been establishd. Average offsite background concentrations of dieldrin and maximum concentrations of aldrin exceed state water quality standards.

Both onsite and background averages and maximum concentrations of beryllium exceed AWQC for human health. Only maximum concentrations of nickel in both onsite and background groundwaters exceed AWQC for human health.

Reproduced from
best available copy.

Table 1
STANDARDS COMPARISON FOR GROUNDWATER

COMPOUND/ELEMENT	Background Concentration (mg/L)		Onsite Concentration (mg/L)		Federal Drinking Water Standards		Ambient Water Quality Criteria (mg/L)[b]		SMCL[a] Chronic	Arkansas Water Quality Criteria
	Average	Maximum	Average	Maximum	MCL (mg/L)[c]	RMCL (mg/L)[d]	Freshwater[e]	Human Health[f]	(mg/L)	(mg/L)[g]
Priority Pollutants										
VOC's										
1,1,2,2-Tetrachloroethane	0.000	0.000	0.000	0.000						
1,1,1-Trichloroethane	0.000	0.000	0.000064	0.002			2.6 (avg)[h]	0.00017 (-6) (w/o)		
Tetrachloroethylene	0.000	0.000	0.0133	0.35		0.2	10.0 (max)[h]	4.9 (-6)		
Trichloroethylene	0.000	0.000	0.00677	0.21		0	0.860 (avg)[h]	0.00080 (-6)	1.07	
Benzene	0.000	0.000	0.00236	0.069		0	65.0 (max)[h]	0.0070 (-6)		
Toluene	0.000047	0.002	0.009	0.13		0	5.3 (max)[h]	0.00067 (-6)	0.07	
Ethylbenzene	0.000	0.000	0.000286	0.0066			17.5 (max)[h]	15	0.360	
Vinylchloride	0.000	0.000	0.00113	0.035			32.0 (max)[h]	2.0		
Chloroethane	0.000	0.000	0.000064	0.002		0		0.002 (-6)		
BNA's										
Phenol	0.00072	0.005	0.0005	0.005						
Bis(2-ethylhexyl)phthalate	0.00108	0.035	0.00176	0.017			2.56 (avg)[h]	3.5		
Di-n-butylphthalate	0.000	0.000	0.000225	0.0063				21.0 (w/o)		
Isophorone	0.000	0.000	0.0136	0.35			117 (max)[h]	44.0		
Pesticides								5.3		
Lindane (gamma-BHC)	0.000219	0.0101	0.000	0.000						
Heptachlor	0.000	0.000041	0.000	0.000	0.004 (P)		0.00009 (avg)	0.000026 (-6)		
Dieldrin	0.00026	0.012	0.000	0.000			0.0000038 (avg)	0.000011 (-6)		
Aldrin	0.000000	0.000029	0.000	0.000			0.0000019 (avg)	0.0000011 (-6)		0.0000019 (avg)
delta-BHC	0.000217	0.01	0.000	0.000			0.003 (max)	0.0000012 (-6)		0.003 (max)
PCB's (TOTAL)	0.000	0.000	0.000	0.000						
Inorganics							0.000014 (avg)	0.000006 (-6)		0.000014 (avg)
Aluminum	0.157	1.43	0.0242	0.315						
Barium	0.216	0.695	0.414	0.888	1.0 (P)					
Beryllium	0.00106	0.0095	0.001	0.0065						
Cadmium	0.000112	0.0015	0.00266	0.0075	0.01 (P)		0.0053 (avg)[h]	0.000039 (-6)[j]		
Calcium	0.000	0.000	43.3	100			esp. (max)[i]	0.01		
Chromium	0.00395	0.062	0.00369	0.048	0.05 (P)		esp. (avg)[i]	179.0 (Cr3+)		
Cobalt	0.000	0.000	0.00177	0.023						
Copper	0.02625	0.235	0.00162	0.0073	1.0 (S)		esp. (avg)[m]	1.0		
Iron	0.404	8.02	2.30	10.86	0.3 (S)					
Lead	0.0111	0.16	0.00618	0.018	0.05 (P)		esp. (avg)[n]	0.05		esp. (avg)[o]
Magnesium	0.000	0.000	7.85	17.8						
Manganese	0.0613	0.33	0.701	2.31	0.05 (S)					
Nickel	0.00321	0.077	0.00557	0.045			esp. (avg)[p]	0.0154		
Potassium	0.000	0.000	2.35	3.67						
Silver	0.000435	0.0102	0.000	0.000	0.05 (P)		esp. (max)[q]			
Sodium	0.000	0.000	17.6	39.5						
Tin	0.0147	0.052	0.000	0.000						
Zinc	0.0569	0.18	0.0106	0.065	5.0 (S)		0.047 (avg)[h]	5.0		
Sulfide	0.0188	0.08	0.617	1.07						
Boron	0.5	0.5	0.99	0.99						

[a] SMCL = Suggested No Adverse Response Level. EPA. 19.
[b] EPA. 1980. Ambient Water Quality Criteria.
[c] MCL=Maximum Contaminant Levels, enforceable standard under 40 CFR 141. P = Primary Drinking Water Standards based on health criteria, best available technology and cost.
[d] S = Secondary Standards based on taste and smell.
[e] RMCL = Recommended Maximum Contaminant Levels, Nonenforceable health goals (Fed. Reg. vol. 49 no. 114, 1984).
[f] Criteria for protection of aquatic freshwater life; ave. = 24-hr average concentration; max. = maximum concentration not to exceed. Criteria for Cd, Cr, Cu, and Pb revised 1986 (Fed. Reg. vol 49 no. 26).
[g] Ingestion of water only, unless indicated by w/o, w/o = water and organism. A (-6) indicates a concentration which would produce a cancer risk of one in a million.
[h] Arkansas Department of Pollution Control and Ecology. 1986.
[i] Insufficient data for criteria development but toxicity information indicates acute (max.) or chronic (ave.) effects from stated concentrations.
[j] Insufficient data for criteria development but available data indicate concentration can have adverse effects.
[k] Staff Health Assessment Manual, 1985.
[l] Concentration for protection of aquatic life determined by hardness in water according to the equation: e to the (1.16 (ln(hardness))-3.841) power.
[m] As above, e to the (0.819 (ln(hardness))+0.537) power.
[n] As above, e to the (0.905 (ln(hardness))-1.705) power.
[o] As above, e to the (1.36 (ln(hardness))-5.245) power.
[p] As above, e to the (2.35 (ln(hardness))-9.48) power.
[q] As above, e to the (0.76 (ln(hardness))+1.06) power.
[r] As above, e to the (1.72 (ln(hardness))-6.52) power.

Table 2
STANDARDS COMPARISON FOR SURFACE WATER

COMPOUND/ELEMENT	Background Concentration (ug/L)		Quality Concentration (ug/L)		Federal Drinking Water Standards		Ambient Water Quality Criteria (ug/L)[b]		SMAVL[a] Chronic	Arkansas Water Quality Criteria
	Average	Maximum	Average	Maximum	MCL (ug/L)[c]	RMCL (ug/L)[d]	Freshwater[e]	Human Health[f]	(ug/L)	(ug/L)[g]
Priority Pollutants										
VOC's										
1,1,2,2-Tetrachloroethane	0.001	0.002	0.000	0.000						
Trichloroethylene	0.0008	0.0016	0.000	0.000		0	2.6 (avg)[h] 65.0 (max)[h]	0.00017 (-6) 0.0028 (-6)		
Pesticides										
PCB (TOTAL)	0.0085	0.017	0.000136	0.00095			0.000014 (avg)	0.000006 (-6)		0.000014 (avg)
Inorganics										
Aluminum	0.586	1.04	0.224	0.418						
Barium	0.051	0.102	0.0319	0.112	1.0 (P)					
Boron	0	0	0.65	0.65						
Beryllium	0	0	0.00307	0.015						
Chromium	0.006	0.012	0	0	0.05 (P)		0.0053 (avg)[i]	0.000017 (-6)[i]		
Iron	0.915	1.27	0.805	0.92	0.3 (S)		exp. (avg)[j]	170.0[k]		
Lead	0.0027	0.0056	0.000857	0.006	0.05 (P)		exp. (avg)[l]	0.05		exp. (avg)[l,m]
Manganese	0.278	0.316	1.24	2.21	0.05 (S)					
Silver	0	0	0.008	0.056	0.05 (P)		exp. (max)[n]	0.05		
Tin	0	0	0.00857	0.033						
Zinc	0.02	0.02	0.01	0.025	5.0 (S)		0.047(avg)	5.0		
Cyanide	0	0	0.005	0.015						
Sulfide	0	0	0.56	1.07						

[a] SMAVL = Suggested No Adverse Response Level. EPA 1986.
[b] EPA. 1980. Ambient Water Quality Criteria. Criteria and Standards Division.
[c] MCL = Maximum Contaminant Level, enforceable standards under 40 CFR 141
[d] RMCL = Recommended Maximum Contaminat Levels, unenforceable health goals (Fed. Reg. vol.49 no. 114 1984)
[e] Criteria for protection of aquatic freshwater life; avg = 24hr. average concentration; max. = maximum value not to exceed. Criteria for Cr and Pb revised 1984 (Fed. Reg. vol 49 no. 26).
[f] Ingestion of water and organisms. Values w/ (-6) indicate concentration of a carcinogen associated w/one additional case of cancer in a population of 1,000,000.
[g] Arkansas Department of Pollution Control and Ecology 1986.
[h] Insufficient data for criteria development but toxicity information indicates acute (max) or chronic (avg) effects from stated concentration.
[i] Revised ambient water quality criteria (1980 Fed. Reg. vol 44 no. 156).
[j] Concentration for protection of aquatic life determined by hardness in water according to the equation: e to the (0.819(ln(hardness))+0.537).
[k] Criteria specific for Cr^{+6}.
[l] Concentration for protection of aquatic life determined by hardness in water according to the equation: e to the (1.36(ln(hardness))-5.265).
[m] Concentration for protection of aquatic life determined by hardness in water according to the equation: e to the (2.35(ln(hardness))-9.48).
[n] Concentration for protection of aquatic life determined by hardness in water according to the equation: e to the (1.72(ln(hardness))-6.52)

NOTES: P = Primary standard based on health criteria, available technology and cost.
S = Secondary standard based on taste and smell.

Reproduced from
best available copy.

Table 3
POTENTIAL DUST CONCENTRATIONS

COMPOUND/ELEMENT	Background Concentration (mg/kg) Average	Background Concentration (mg/kg) Maximum	Onsite Concentration (mg/kg) Average	Onsite Concentration (mg/kg) Maximum	Background Estimated Concen. in 260 µg/m³ Dust Average	Background Estimated Concen. in 260 µg/m³ Dust Maximum	Onsite Estimated Concen. in 260 µg/m³ Dust Average	Onsite Estimated Concen. in 260 µg/m³ Dust Maximum	OSHA[a] Standard (mg/m³)	TLV (mg/m³)
Priority Pollutants										
VOA's										
Tetrachloroethylene	NA	NA	0.136	3.9	0.000	0.000	0.00001	0.00101		
Chloroform	NA	NA	1.32	21	0.000	0.000	0.00014	0.00546	240[f]	335
Benzene	NA	NA	0.00176	0.031	0.000	0.000	0.000	0.000	-	50
Toluene	NA	NA	24.6	330	0.000	0.000	0.00639	0.0858	0.14[b]	30
Ethyl Benzene	NA	NA	3.36	50	0.000	0.000	0.00087	0.01534	435	375
BNA's										435
Naphthalene	NA	NA	0.615	12	0.000	0.000	0.00015	0.00312	50	
Bis(2-ethylhexyl)phthalate	0.000	0.000	17.9	250	0.000	0.000	0.00466	0.065	-	50
Diethyl Phthalate	NA	NA	0.0316	0.88	0.000	0.000	0.000	0.00022	5	-
Benzo(a)anthracene	NA	NA	0.292	8	0.000	0.000	0.00001	0.00208	-	5
Pyrene	NA	NA	0.301	8	0.000	0.000	0.00001	0.00208	-	0.2[c]
Pentachlorophenol	NA	NA	0.0743	2	0.000	0.000	0.00001	0.00052	0.5	0.2[c]
Di-n-octyl phthalate	NA	NA	0.0271	0.76	0.000	0.000	0.000	0.00019	-	0.5
Di-n-butyl phthalate	NA	NA	0.0478	0.33	0.000	0.000	0.00001	0.00008	-	-
Butylbenzyl phthalate	NA	NA	0.0525	0.73	0.000	0.000	0.00001	0.00018	-	5
Diethyl phthalate	NA	NA	0.0111	0.31	0.000	0.000	0.000	0.00008	-	-
Isophorone	NA	NA	12.9	330	0.000	0.000	0.00334	0.0858	-	-
Pesticides									140	5
4,4-DDE	0.042	0.807	0.00037	0.0082	0.00001	0.00020	0.000	0.000	-	25[b]
4,4-DDD	NA	NA	0.00183	0.071	0.000	0.000	0.000	0.00001	-	-
4,4-DDT	0.054	1.2	0.00017	0.00843	0.00001	0.00031	0.000	0.000	-	-
Endrin	NA	NA	0.00041	0.0198	0.000	0.000	0.000	0.000	1.0[d]	1[d]
Lindane	NA	NA	0.00008	0.00403	0.000	0.000	0.000	0.000	0.5[d]	0.1[d]
Heptachlor	NA	NA	0.00020	0.005	0.000	0.000	0.000	0.000	0.5[d]	0.5[d]
Chlordane	NA	NA	0.0294	1.26	0.000	0.000	0.000	0.000	0.5[d]	0.5[d]
Dieldrin	NA	NA	0.00138	0.0335	0.000	0.000	0.000	0.00032	0.5[d]	0.5[d]
Aldrin	NA	NA	0.00006	0.00118	0.000	0.000	0.000	0.000	0.25[d]	0.25[d]
Alpha-BHC	NA	NA	0.00005	0.00262	0.000	0.000	0.000	0.000	0.25[d]	0.25[d]
PCB (total)	0.000	0.000	0.323	4.6	0.000	0.000	0.000	0.000	-	-
Inorganics									-	0.5-1.0[d]
Aluminum	6,230	13,000	11,400.0	51,400	2.1372	3.38	2.96	13.4		
Antimony	0.000	0.000	0.3	6.6	0.000	0.000	0.00007	0.00171	-	-
Arsenic	7.88	23	14.8	73	0.00204	0.00598	0.00384	0.0190	0.5	0.5
Barium	73.6	114	118	693	0.0191	0.0296	0.0308	0.164	0.01	0.2
Beryllium	0.284	0.42	0.216	1.3	0.00007	0.00010	0.00005	0.00033	-	-
Boron	0.000	0.000	60.9	93	0.000	0.000	0.0158	0.0242	0.02	0.002
Cadmium	0.04	0.11	2.66	21	0.00001	0.00002	0.00063	0.00546	-	1
Calcium	0.000	0.000	801	801	0.000	0.000	0.209	0.209	0.2	0.05
Chromium	3.85	6.1	55.3	1,047	0.00100	0.00158	0.0144	0.272	-	-
Cobalt	4.32	6.4	2.49	12.5	0.00112	0.00166	0.00068	0.00325	1	0.5[e]
Copper	3.33	5.8	92.8	780	0.00086	0.00150	0.0241	0.203	0.1	0.1
Iron	5,063	9,260	9,940	72,300	1.32	2.41	2.58	10.8	1	1
Magnesium	6.36	9.7	111	800	0.00164	0.00252	0.0290	0.208	-	-
Manganese	0.000	0.000	466	466	0.000	0.000	0.121	0.121	0.05	0.15[f]
Mercury	620.3	690.0	384	827	0.109	0.179	0.100	0.215	-	-
Nickel	0.000	0.000	0.0213	0.17	0.000	0.000	0.00000	0.00004	5.0[b]	5
Potassium	11.8	19	15.6	191	0.00306	0.00494	0.00405	0.0500	0.1	0.1
Selenium	0.000	0.000	636	636	0.000	0.000	0.165	0.165	1	0.1
Silver	0.000	0.000	0.0129	0.25	0.000	0.000	0.000	0.00006	-	-
Sodium	0.000	0.000	0.0645	1.4	0.000	0.000	0.00001	0.00036	0.2	0.2
Tin	0.000	0.000	57	57	0.000	0.000	0.0148	0.0148	0.01	0.1
Vanadium	1.81	2.1	2.26	29	0.00026	0.00054	0.00058	0.00756	-	-
Zinc	3.9	16	2.496	16	0.00101	0.00416	0.00063	0.00416	2	2
Cyanide	14.91	22	270	1,700	0.00372	0.00572	0.0701	0.442	0.5[g]	0.05
Sulfide	0.000	0.000	0.0432	0.99	0.000	0.000	0.00001	0.00025	-	10
	0.000	0.000	4 3	37	0.000	0.000	0.00111	0.00962	5	5
									-	-

[a] 29 CFR 1910.1000
[b] C indicates ceiling limit.
[c] Total for coal tar derivatives.
[d] Skin contact.
[e] Chromium as Cr^{+3}.
[f] Inorganic dust.
[g] As V_2O_5 dust.
NOTES: NA indicates compound not analyzed for.
- indicates no standards available.

Table 4
DUST CONCENTRATIONS FROM ONSITE AND BACKGROUND DIRT SAMPLES

COMPOUND/ELEMENT	Background Concentration (ng/kg)		Onsite Concentration (ng/kg)		Background Estimated Concen. in 260 µg/m³ Dust		Onsite Estimated Concen. in 260 µg/m³ Dust		OSHA[a] Standard (mg/m³)	TLV (mg/m³)
	Average	Maximum	Average	Maximum	Average	Maximum	Average	Maximum		
Priority Pollutants										
VOC's										
Toluene	NA	NA	0.020	0.016	0.000	0.000	0.000	0.000	0.10[b]	375
BNA's										
Bis(2-ethylhexyl)phthalate	0.000	0.000	0.662	1.1	0.000	0.000	0.00017	0.00028	--	--
Isophorone	NA	NA	0.252	0.09	0.000	0.000	0.00005	0.00023	140	25[b]
Pesticides										
4,4-DDE	0.042	0.087	0.0002	0.001	0.00001	0.00020	0.000	0.000	--	--
4,4-DDT	0.054	1.2	NA	NA	0.00001	0.00031	0.000	0.000	1.0[c]	1[c]
PCB (total)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	--	0.5-1.0[c]
Inorganics										
Aluminum	6,220	13,000	36,400	53,600	2.14	3.38	9.46	13.9	--	--
Antimony	0.000	0.000	5	17	0.000	0.000	0.0013	0.00442	0.5	0.5
Arsenic	7.88	23	36.1	69.2	0.00204	0.00598	0.00938	0.012	0.01	0.2
Barium	73.6	116	165	313	0.0191	0.0296	0.0429	0.0814	--	--
Beryllium	0.284	0.62	1.36	2.3	0.00007	0.00010	0.00032	0.00057	0.02	0.002
Boron	0	0	NA	NA	0.000	0.000	0.000	0.000	--	1
Cadmium	0.04	0.11	7.44	25.2	0.00001	0.00002	0.00190	0.00655	0.2	0.05
Calcium	0	0	15,700	36,000	0.000	0.000	4.08	9.600	--	--
Chromium	3.85	6.1	199	622	0.00100	0.00158	0.0503	0.162	1	0.5[d]
Cobalt	4.32	6.6	13.6	29	0.00112	0.00166	0.00348	0.00754	0.1	0.1
Copper	3.33	5.8	1,060	4,910	0.00086	0.00150	0.275	1.28	1	1
Iron	5,063	9,360	42,900	148,100	1.32	2.41	11.1	38.5	--	--
Lead	6.36	9.7	367	1,190	0.00166	0.00252	0.0955	0.362	0.05	0.15[e]
Magnesium	0.000	0.000	13,000	31,600	0.000	0.000	3.37	8.22	--	--
Manganese	420.3	690.0	601	1,400	0.109	0.1794	0.156	0.365	5.0[b]	5
Mercury	0.000	0.000	0.1	0.5	0.000	0.000	0.00002	0.00013	0.1	0.1
Nickel	11.8	19	39.2	112	0.00306	0.00494	0.0102	0.029	1	0.1
Potassium	0.000	0.000	1,630	2,060	0.000	0.000	0.421	0.535	--	--
Selenium	0.000	0.000	NA	NA	0.000	0.000	0.000	0.000	0.2	0.2
Silver	0.000	0.000	0.66	1.3	0.000	0.000	0.00017	0.00085	0.01	0.1
Sodium	0.000	0.000	1,910	2,560	0.000	0.000	0.497	0.664	--	--
Tin	1.01	2.1	7.0	39	0.00026	0.00056	0.00202	0.0101	2	2
Vanadium	3.9	16	36.2	53.9	0.00101	0.00416	0.00940	0.0140	0.5[f]	0.05
Zinc	16.31	22	386	1,160	0.00372	0.00572	0.101	0.300	--	10

[a] 29 CFR 1910.1000
[b] C indicates ceiling limit.
[c] Skin contact.
[d] Chromium as Cr^{+3}.
[e] Inorganic dust.
[f] As V_2O_5 dust.
NOTES: NA indicates compound not analyzed for.
- indicates no standards available.

Village Creek Surface Water - Degree of Contamination

Table 2 indicates that primary drinking water standards for silver are exceeded by 0.006 mg/L based on the maximum concentration observed at the site. Secondary drinking water standards are exceeded at the site and in upstream surface waters (averages and maximums) for iron and manganese. No VOC's were detected in Village Creek near the site.

Average and maximum PCB concentrations in Village Creek near the site exceed AWQC for human health, aquatic life and state water quality standards. Upstream concentrations of PCB's also exceed these criteria and standards and are an order of magnitude greater than concentrations found at the site. Average beryllium concentrations in Village Creek near the site exceed AWQC for human health and aquatic life.

Village Creek Sediments - Degree of Contamination

The maximum concentrations of inorganics are all within the range of concentrations found in background U.S. soils. The low levels of pesticides (dieldrin, aldrin) are not significant and are indicative of area land use, i.e farming, and not site contaminants.

Dust Entrainment - Degree of Contamination

Tables 3 and 4 show that the estimated concentrations of airborne lead and arsenic from both surface soils and dike materials exceed Occupational Health and Safety Administration (OSHA) standards for workplace exposures.

Estimated concentrations of airborne lead, using maximum concentrations in onsite soils and average or maximum concentrations of dike materials, also exceed National Ambient Air Quality Standards (NAAQS) and the recommended Threshold Limit Value (TLV) for inorganic lead.

Surface Soils - Degree of Contamination

Average concentrations of the carcinogens, arsenic, beryllium, cadmium, chromium, copper, cobalt, and nickel in onsite soils and diked materials are within the range of concentrations found in background U.S. soils. Table 5 compares average concentrations of metals onsite and in background samples to concentrations in U.S. soils. The Centers for Disease Control (CDC) has indicated that 100 milligrams per kilogram (mg/kg) arsenic in soil does not present a public health risk through inhalation or ingestion (See CDC memo on Crystal Chemical 12/8/83). The maximum arsenic concentration found in onsite shallow surface soils is 73 mg/kg. Therefore, it is not anticipated that arsenic concentrations in the surface soils will present a problem to the public or environment.

Geology and Topography

The Cecil Lindsey site is located within the 100 year floodplain of Village Creek (the site is also completely inundated by the 10 year flood). The floodplain extends approximately 500 feet west of the main

Table 5
COMPARISON OF CONCENTRATIONS OF METALS IN ONSITE SURFACE SOILS TO THE RANGE AND AVERAGE CONCENTRATIONS IN U.S. SOILS

Element	Avg Onsite[a]	Concentration in Soils (mg/kg) Range in U.S.	Avg U.S.
Antimony	0.3	0 - 150	6
Arsenic	15	0.1 - 194	11
Boron	60	2 - 130	10
Cadmium	2	0.01 - 7	0.5
Calcium	800	150 - 320,000	24,000
Chromium	55	5 - 3,000	100
Cobalt	3	1 - 40	8
Copper	90	2 - 100	20
Iron	9,940	100 - >100,000	25,000
Lead	110	<1 - 880	29
Manganese	380	50 - 18,300	850
Mercury	0.02	0.01 - 5	0.1
Nickel	16	0.1 - 1,530	35
Selenium	0.01	0.1 - 38	0.2
Silver	0.06	0.01 - 8	0.4
Tin	2	2 - 200	10
Vanadium	2	<7 - 500	100
Zinc	270	10 - 2,000	55

[a]Values rounded.
Source: McClanahan 1984.

channel. The eastern boundary of the site occurs at a slight break in slope marking the beginning of a wetlands area bordering Village Creek. Topographic relief is slight across the site with a maximum change in elevation of about 6 feet. Topographic relief increases slightly west of the site with a maximum change in elevation of about 12 feet.

Underlying the site are a series of unconsolidated sands and silty sands to a depth of 120 to 150 feet. Thin lignite stringers occur throughout the section. The upper 20 to 30 feet of the unconsolidated deposits contain appreciable quantities of fine sand to silt, while the lower portions of the unit are a cleaner medium sand.

Groundwater - General

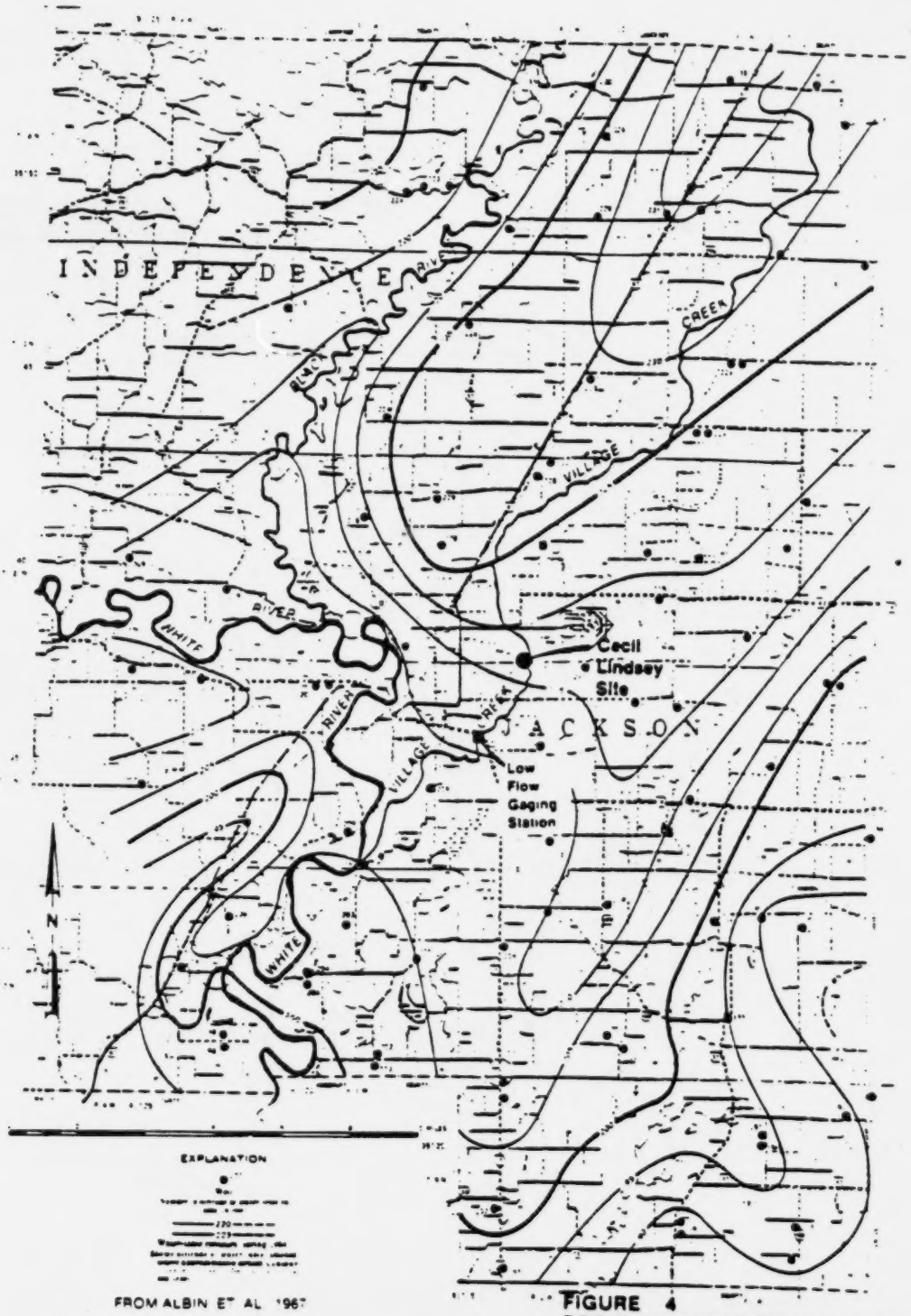
The regional groundwater flow in Jackson County, shown in Figure 4, is generally to the southwest toward the White River from a recharge area in the northeastern portion of the county. Groundwater generally occurs under unconfined, water table conditions in the alluvial sediments in the vicinity of the site. The groundwater system at the site is hydraulically connected with and discharging to Village Creek. This conclusion is based on the nature of the permeable sediments, the generally unconfined water table aquifer, the close relationship between observed ground and surface water levels, and a similar response to rainfall in these two systems.

Groundwater Flow

Groundwater flow rates beneath the Cecil Lindsey site depend on the hydraulic conductivity, porosity of the aquifer material, and the groundwater gradients. During both winter and summer periods, the gradient of the water table surface in the vicinity of the site is approximately 0.003 ft/ft toward Village Creek. Groundwater flow direction is shown in Figure 5. An average groundwater flow rate of 8.35×10^{-5} cm/sec (0.2 ft/day) was calculated using a porosity of 30 percent (typical of sandy materials). Minimum and maximum flow rates using the high and low values for hydraulic conductivity ranged from 7×10^{-6} cm/sec (0.02 ft/day) to 7×10^{-4} cm/sec (2 ft/day).

Using the average groundwater velocities, travel time for groundwater flow from the center of the Cecil Lindsey site to the main channel of Village Creek (500 feet away) requires approximately 2,500 days (7 years).

Based on aquifer conditions near the site, analyses were conducted to determine if flood flows in Village Creek or pumping wells at the nearest residence could reverse groundwater flow directions and thereby move contaminated groundwater toward nearby residential wells. Two potential situations were examined; continuous pumping of the nearest residential well and impact of the 100 year floodplain in Village Creek.



FROM ALBIN ET AL 1967

FIGURE 4
REGIONAL GROUNDWATER FLOW
CECIL LINDSEY

Reproduced from
best available copy.

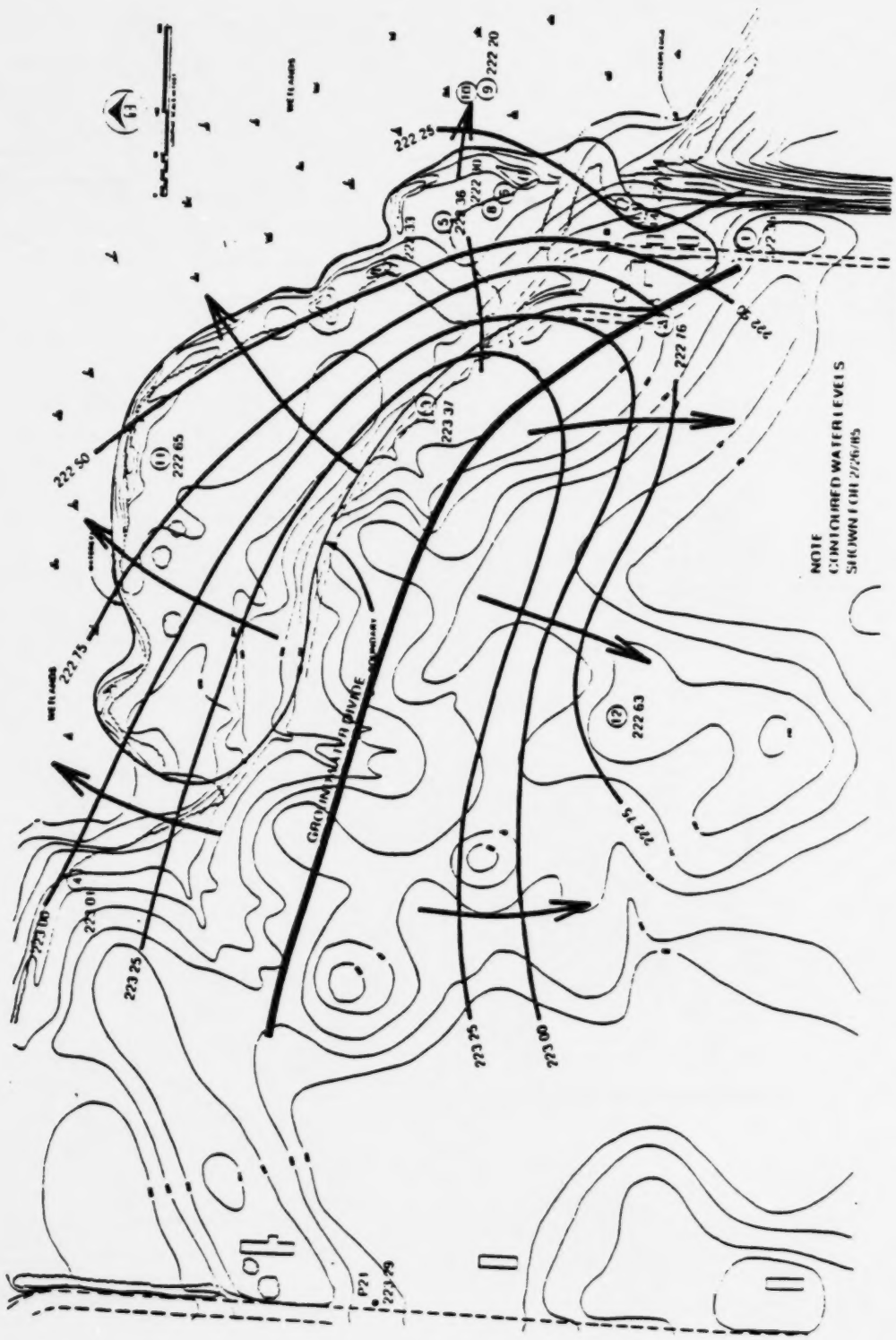


FIGURE 5
SITE GROUNDWATER FLOW

The nearest residential well is approximately 1,200 feet from the contamination noted at Well No. 5. Using standard well hydraulic equations, the maximum radius of influence for a well pumping continuously at a rate of 5 gallons per minute for 10,000 days (27 years) was calculated. There was no detectable drawdown at a radius of 1,200 feet, indicating that contaminated water should not be drawn from the site to the nearest residental well.

The impact of a 100 year flood on the rate and direction of groundwater flow was evaluated by assuming an instantaneous rise in Village Creek that would result in a complete reversal of the groundwater flow direction and an increase in the gradient from 0.003 ft/ft to 1.005 ft/ft. Using the maximum estimated hydraulic conductivity, this hypothetical flood state would have to be maintained for more that 450 days to move contaminated water to the nearest residential well. Because normal flood stages rarely remain for more than 7 days, sustained groundwater flow reversal due to flooding (or seasonal groundwater fluctuations) is unlikely.

Exposure Assessment/Health Assessment

Both the Exposure Assessment conducted as part of the Feasibility Study and a Health Assessment conducted by the Centers for Disease Control (CDC) (see Appendix A) concluded that no significant public health risk currently exists at the site.

The CDC evaluation gave the following comments and recommendations:

1. Based on the data reviewed, the Cecil Lindsey Site offers no immediate public health threat to the surrounding community.

2. Although the groundwater onsite was found to contain low levels of VOC's and inorganics, no people are currently drinking contaminated water. The potential for offsite migration of contaminants exists; therefore, groundwater movement needs to be monitored carefully. The materials reviewed indicate that all existing private and public wells are upgradient and that reversal of groundwater flow is highly unlikely.

3. Public access to this site should continue to be restricted to reduce direct contact with the contaminants onsite.

4. Following further characterization of containerized wastes onsite, the drums of material may need to be removed and, if required, placed in a secured hazardous waste landfill.

The Exposure Assessment conducted as part of the FS had the following conclusions:

Few contaminants are found at the Cecil Lindsey site that exceed background concentrations and standards or criteria. Potential receptors to these contaminants are limited.

Onsite groundwater exceeds AWQC for three volatile organic compounds, all occurring in one location and the exceedances are based on the maximum concentrations detected. Direct, continuous use of onsite groundwater is not anticipated at the site, since the site is located completely within the 10 year floodplain and is unsuited for residential development due to local and Federal constraints. According to local residents, parts of the site are inundated yearly. Receptors would most likely be limited to occasional site intruders (such as fishermen and hunters) and agricultural or salvage workers.

According to the RI report, offsite migration of groundwater is toward Village Creek. Dilution and volatization of the contaminants in groundwater would reduce the concentrations expected in Village Creek. No VOC's were detected in the surface water samples taken in the creek adjacent to the site.

Surface water adjacent to the site in Village Creek exceeds primary drinking water standards for silver by 0.006 mg/L in one sample which was the maximum concentration detected. The average concentration of silver in surface water is an order of magnitude lower than the primary drinking water standard. Potential receptors for surface water ingestion are limited to occasional intruders (such as recreationalists, fishermen, swimmers, and waders) since Village Creek downstream from the site is not currently used as a potable water source. Village Creek is a tributary to the White River which in turn discharges to the Mississippi River. Ingesting 2 liters of water per day from Village Creek at the maximum concentration of silver detected would only exceed the acceptable daily intake of silver by 12 percent. If less than the total daily consumption of 2 liters of water per day is used, as would be the case for occasional intruders (swimmers consume an average of 50 ml per 15-minute swim), the intake of silver would be below the acceptable daily no-effect level.

Beryllium exceeds ambient water quality criteria for human health in surface water adjacent to the site. Water quality criteria for beryllium have been set based on the carcinogenic properties of the compound, which have been demonstrated from inhalation exposure. The development of cancer as a result of ingestion has not been demonstrated, however, and a conservative approach has been taken to base the water quality criteria on the carcinogenic properties. If surface water were ingested at 2 liters per day, the acceptable daily human intake of beryllium would not be exceeded even if the maximum concentrations of beryllium were used.

Sediments do not represent a threat to public health through direct contact. Direct contact by occasional intruders is principally the only route of exposure to sediments in Village Creek.

Potential receptors to onsite soils and dike materials are limited. Soils would not pose a health threat through direct contact. Ingesting up to 0.1 gram of soils a day would not exceed the acceptable daily intake for any compound onsite. Inhalation of airborne particulates

containing lead at the maximum concentrations found in onsite soils would exceed occupation standards for continuous 8-hour exposure over a 40-year period. It is unlikely that dust would be generated from only those areas containing the most highly contaminated soils and that it would be sustained for an 8-hour period. Dike materials e similar in that dusts generated from materials containing lead at avarage or maximum concentrations would exceed occupational standards. Ingesting dike materials would exceed the Acceptable Daily Intake (ADI) for lead if the maximum concentrations of lead were ingested at the maximum daily intake rate of 0.1 gram.

ENFORCEMENT

In March 1980, the Arkansas Deparment of Pollution Control and Ecology (ADPC&E) sent letters to seven local industries requesting information as to any use of the dump by these companies. Only Victor Industries Corp. and Revere Copper and Brass, Inc., both of Newport, Arkansas, admitted to dumping wastes at the site. Victor Industries Corp., admitted dumping solvents. All of the other parties questioned denied any use of the site.

In April 1985, the EPA sent out letters requesting information on the site under Section 104(e) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) and Section 3007 of the Resource Conservation and Recovery Act (RCRA). Ten such inquiries were sent to industries who operate or had operated in the Newport and Diaz area. As a result of these inquiries, Revere and Victor are being considered as Potentially Responsible Parties (PRP's). Mr. Lindsey is also a PRP by virtue of his ownership of the site and operation of the dump.

Revere Copper and Brass, Inc. filed for reorganization under Chaper 11 of the U.S. Bankruptcy code on October 27, 1982. Since Revere is still under the control of the bankruptcy court, it is uncertain at this time how much of the RI/FS and remedial action they will be able to fund. Victor Industries has very limited resources and although it could pay some of the costs it could not pay for a substantial amount of the costs. None of the PRP's have as yet expressed interest in participating in any work on the site. As the Health Assessment and the Exposure Assessment indicated that the site poses little endangerment as it now stands, it is unlikely that either a §106 action or a §107 action would be successful.

ALTERNATIVE EVALAUATION

The Feasibility Study developed a list of alternative remedial actions which would meet a set of site-specific objectives. These objectives were:

- To ensure public health and safety.
- To protect the quality of local ground and surface water.

- To preserve local land used by preventing the migration of contaminants to nearby agricultural and residential lands.

- To ensure that the remedial actions are technically feasible and cost-effective.

Initially, a list of technologies was developed to evaluate methods to remedy any potential health problems associated with the site contaminants. These were developed per the National Contingency Plan (NCP), 40 Code of Federal Regulations (CFR) 300.68(f). These technologies were then screened per 40 CFR Part 300.68(g) using technical feasibility, effectiveness, costs and environmental/public health impacts as criteria for evaluation, after which the majority of the alternatives were eliminated. Chemical treatment of soil, solidification, incineration and onsite disposal were removed from consideration due primarily to high cost and/or unproven technology status. Geological factors at the site discouraged selection of groundwater treatment and control technologies. Grout curtains and slurry walls could not be used to isolate waste because the underlying Wilcox formation, with its sands and silty sands, does not provide a reliable foundation. Individual well treatment and providing bottled water are short term remedies and do not address the problem in the most cost-effective way.

After the initial screening a more detailed analysis of the remaining alternatives was conducted as per 40 CFR Part 300 68(h) in order to determine the most cost-effective appropriate remedy.

Five comprehensive alternatives were developed and evaluated. These are:

1. Excavation and offsite disposal of soils to background levels in compliance with RCRA closure requirements; groundwater treatment; bio-monitoring of surface water and sediments; removal of onsite drums.

2. Clay cap; revegetate site; groundwater treatment; bio-monitoring of surface water and sediment; removal of onsite drums.

3. Multi-media cap (RCRA); revegetate site; groundwater treatment; bio-monitoring of surface water and sediments; removal of onsite drums.

4. Limited action - land use restrictions; site access restrictions; groundwater use restrictions; installation of two additional monitoring wells and groundwater monitoring for a period of three years; removal of onsite drums.

5. No action.

(Again, in summary, the investigative findings and the two health assessments fail to substantiate any current significant threats to public health or the environment as a result of the Cecil Lindsey site.)

ALTERNATIVE #1: OFF-SITE DISPOSAL

Excavation/removal of soils and extraction of groundwater to background levels for both organics/inorganics. This represents the most comprehensive remedial action. Contaminated soils would be removed and replaced with clean backfill material. The extracted groundwater would be pumped 8 miles to the White River for discharge. This alternative would eliminate the potential for direct exposure to contaminants in the soil and groundwater.

Removal operations could produce potential volatile emissions and would require onsite air monitoring during the remedial action. The site would be revegetated after completion of the soil removal action.

The cost for excavating and removing waste material for disposal at a secure RCRA landfill (approximately 18,000 cubic yards), backfilling with clean borrow obtained from a nearby offsite source, and extracting groundwater to background levels of organics/inorganics (for approx. 40 years) is estimated to be $7,979,000.

See Table 6 for a detailed cost breakdown.

ALTERNATIVE 2: CLAY CAP

Capping contaminated areas with a clay cap and the extraction of groundwater to attain Ambient Water Quality Criteria (AWQC) for volatile organics would reduce the potential for migration of contaminants from the site. The clay cap would provide effective protection against erosion, dust generation, and direct exposure to contaminated soils. The cap would be contoured to promote runoff, and would be vegetated.

Cap construction could produce potential volatile emissions and would require onsite air monitoring during the remedial action. The cap would limit use of the land in the future, since the integrity of the cap must be maintained. The clay cap will not afford protection against infiltration of contaminants caused by fluctuating and elevated groundwater due to flooding. Alternative 2 would have limited applicability at this site because the site is located within the 10 year floodplain.

The cost was determined based on a 2-foot-thick clay cap overlain with 6 inches of topsoil and extracting groundwater to AWQC levels for volatile organics. The clay cap would require 17,000 cubic yards of local offsite clay and 4,200 cubic yards of topsoil. Attaining AWQC levels for volatile organics by extraction of the groundwater is estimated to take approximately 8 years. The cost of the alternative is calculated to be $2,674,000.

See Table 7 for a detailed cost breakdown.

ALTERNATIVE 3: MULTIMEDIA CAP

Capping contaminated areas with a multimedia cap and the extraction of

Table 6
COST ESTIMATE FOR CATEGORY 1--RCRA OFFSITE DISPOSAL

This alternative includes removing soils to 0.5 feet in most of the North and South Areas, removing Well 5 Area soils to 4 feet, removing Dike Area soils to 6 feet, removal/disposal of drums and road material and pumping/disposing onsite groundwater (VOC's and inorganics) to background levels (40 years).

Item	Capital Costs	O&M Costs	Present Worth[a]
Construct Haul Road	$ 30,000		$ 30,000
Excavate Soil	90,000		90,000
Transport Soil to RCRA Landfill	1,815,000		1,815,000
Disposal of Soil at RCRA Landfill	993,000		993,000
Backfill and Grading of Excavated Areas	169,000		169,000
Revegetate Site	9,000		9,000
Dewatering for Excavation	291,000		291,000
Groundwater Recovery	58,000	$ 11,000	174,000
Groundwater Disposal	423,000	57,000	1,005,000
Remove and Dispose of Drums	29,000		29,000
Biological Monitoring	0	23,000	40,000
Groundwater Monitoring Wells	10,000	41,000	412,000
Post Closure Monitoring	0	41,000	9,000
Mobilization, Bonds, and Insurance (3%)	118,000		118,000
Health and Safety (4%)	157,000		157,000
Construction Subtotal	$4,192,000	$173,000	$5,336,000
Bid Contingencies (15%)	629,000		629,000
Scope Contingencies (15%)	629,000		629,000
Construction Total	$5,450,000		
Permitting and Legal (7%)	382,000		382,000
Services during Construction (7%)	382,000		382,000
Total Implementation Cost	$6,214,000		
Engineering Design Cost (10%)	621,000		621,000
Total Cost, Cagetory 1--RCRA OFFSITE			$7,979,000

[a] Total present worth costs are defined as the sum of the capital costs, the present worth of the replacement costs, and the present worth of the annual O&M expenses using a 30-year replacement cost and 10 percent interest.

Table 7
COST ESTIMATE FOR CATEGORY 2-- CLAY CAP

This alternative includes the installation of a cap over contaminated soils, pumping, and disposing groundwater (VOC's only) to AWQ levels (8 years) and removal/disposal of drums and road materials.

Item	Capital Costs	O&M Costs	Present Worth[a]
Construct Haul Road	$ 30,000		$ 30,000
Loam over Clay Cap	274,000	$ 27,000	561,000
Regrade Site--Preparation for Capping	42,000		42,000
Revegetate Site	9,000		9,000
Groundwater Recovery	58,000	11,000	117,000
Groundwater Disposal	423,000	57,000	727,000
Remove and Dispose of Drums	29,000		29,000
Biological Monitoring	0	23,000	40,000
Groundwater Monitoring Wells	10,000	41,000	229,000
Construct Perimeter Fence	26,000	1,000	38,000
Post Closure Monitoring	0	41,000	180,000
Mobilization, Bonds, and Insurance (3%)	27,000		27,000
Health and Safety (4%)	36,000		36,000
Construction Subtotal	$964,000	$201,000	$2,065,000
Bid Contingencies (15%)	145,000		145,000
Scope Contingencies (15%)	145,000		145,000
Construction Total	$1,254,000		
Permitting and Legal (7%)	88,000		88,000
Services during Construction (7%)	88,000		88,000
Total Implementation Cost	$1,430,000		
Engineering Design Cost (10%)	143,000		143,000
Total Cost, Category 2-- CLAY CAP			$2,674,000

[a]Present Worth costs are defined as the sum of the capital costs, present worth of the replacement costs, and the present worth of the annual O&M costs using the facility life indicated, a 30-year replacement cost, and 10 percent interest.

groundwater to attain Ambient Water Quality Criteria (AWQC) for both organics and inorganics would reduce the potential for migration of contaminants from the site. This system provides two layers of protection (clay and synthetic membrane) against the routes of exposures (erosion, dust, direct contact) discussed in Alternative 2. The multimedia cap would be similar in appearance to the clay cap from the surface. (The primary difference between Alternatives 2 & 3 is the type of cap.)

Volatile emissions are possible during construction of the cap. Alternative 3 requires air monitoring during this period. Restrictions on the land use would have to be imposed to protect the integrity of the cap.

The synthetic liners used in multimedia caps are vulnerable to tearing, joint separation, exposure to contaminants, and puncturing due to burrowing animals and plant roots. The multimedia cap will not afford protection against infiltration of contaminants caused by fluctuating and elevated groundwater due to flooding. Alternative 3 would have the limitations of the clay cap because of the site location within the 10 year floodplain.

The cost of Alternative 3 was identified for constructing a 3.5 foot thick multimedia cap overlain with 24 inches of topsoil (and vegetated) and extracting groundwater to AWQC levels for both organics and inorganics. The cap would include, in order from bottom to top: 2 feet of clay, 6 inches of bedding, synthetic liner, 1 foot of sand, and 2 feet of topsoil. The multimedia cap will require 19,000 cubic yards of offsite clay, 9,500 cubic yards of sand, and 19,000 cubic yards of topsoil. Attaining AWQC levels for both organics and inorganics by extraction is estimated to take 150 years. The estimated cost of Alternative 3 is $3,930,000.

See Table 8 for a detailed cost breakdown.

ALTERNATIVE 4: LIMITED ACTION

This limited action response would include site access restrictions, the installation of two wells, groundwater monitoring and the removal of site drums that contain hazardous substances. Restricting site access would reduce the potential for direct contact with site materials. Further actions may be initiated should future monitoring reveal significant violations of EPA standards.

The site access restrictions envisioned include the use of posted warning signs in addition to the existing fence. Additional fencing is not thought necessary considering the site's remote location and relative lack of hazardness.

Although not considered necessary in this case, it is important to note that the Region questions the use of deed restrictions as an appropriate remedial tool. It is not known if such restrictions could be legally attained or even enforced. (A notice could possibly be placed in the county records, though it would only notify and not restrict)

Table 8
COST ESTIMATE FOR CATEGORY 3-- MULTIMEDIA CAP

This alternative includes capping (RCRA) of contaminated soils, pumping and disposing of groundwater (VOC's and inorganics) to exceed AWQ levels (150 years), and removal/disposal of drums and road materials.

Item	Capital Costs	O&M Costs	Present Worth[a]
Construct Haul Road	$ 30,000		$ 30,000
RCRA Cap	594,000	$ 59,000	1,220,000
Regrade Site--Preparation for Capping	42,000		42,000
Revegetate Site	9,000		9,000
Groundwater Recovery	58,000	11,000	172,000
Groundwater Disposal	423,000	57,000	1,019,000
Remove and Dispose of Drums	29,000		29,000
Biological Monitoring	0	23,000	40,000
Groundwater Monitoring Wells	10,000	41,000	421,000
Construct Perimeter Fence	26,000	1,000	38,000
Post Closure Monitoring	0	41,000	0
Mobilization, Bonds, and Insurance (3%)	37,000		37,000
Health and Safety (4%)	49,000		49,000
Construction Subtotal	$1,307,000	$233,000	$3,106,000
Bid Contingencies (15%)	196,000		196,000
Scope Contingencies (15%)	196,000		196,000
Construction Total	$1,699,000		
Permitting and Legal (7%)	119,000		119,000
Services during Construction (7%)	119,000		119,000
Total Implementation Cost	$1,937,000		
Engineering Design Cost (10%)	194,000		194,000
Total Cost, Category 3-- MULTIMEDIA CAP			$3,930,000

[a]Present Worth costs are defined as the sum of the capital costs, present worth of the replacement costs, and the present worth of the annual O&M costs using the facility life indicated, a 30-year replacement cost, and 10 percent interest.

This alternative does not call for groundwater withdrawal due to the fact that the limited groundwater plume is moving in the direction of Village Creek and because there are not any downgradient receptors. Site access restrictions should help to restrict the use of onsite contaminated groundwater.

The identified cost for Alternative 4 assumes a monitoring period of 3 years. Operation and maintenance costs for the wells are the most significant expenditures for this alternative. The estimated cost for Alternative 4 is $121,000.

See Table 9 for a detailed cost breakdown.

ALTERNATIVE 5: NO ACTION

In accordance with section 300.68 (f) of the National Contingency Plan (NCP), a no action alternative was evaluated. This plan involves leaving the site as it currently exists.

Concerning the implications of a no action alternative, both the Exposure and Health Assessments address the current risks associated with the site. As a whole the site is not considered to pose a significant public health or environmental risk. The CDC evaluation, however, does recommend further monitoring and site access restrictions.

COMMUNITY RELATIONS

A public meeting was held by the USEPA on April 3, 1986, to discuss the results of the Remedial Investigation/Feasibility Study (RI/FS) for the Cecil Lindsey site. Notification of the meeting was accomplished through press releases sent to all newspapers listed in the Cecil Lindsey Community Relations Plan and mailings to all parties listed in the "contacts" section of the plan. The meeting was attended by approximately 11 people. (The Mayor of Newport and his aldermen were briefed earlier in the day and they decided not to attend the public meeting.) The proposed remedy recommended a limited action measure consisting of the following components:

1) Site and access restrictions.
2) Installation of 2 monitoring wells.
3) 1 year of groundwater monitoring (16 onsite wells to be monitored).
4) Remove/dispose of containerized wastes.

The meeting was opened for discussion, and few questions regarding the site were raised. The meeting was very uneventful. A discussion of the public's response to the meeting is included in the attached responsiveness summary (Appendix B).

CONSISTENCY WITH OTHER ENVIRONMENTAL LAWS

Alternatives were examined in light of relevant Federal, state and local environmental program requirements. Applicable RCRA and CERCLA

Table 9
COST ESTIMATE FOR CATEGORY 4-- LIMITED ACTION

This alternative includes limiting site access, limiting groundwater use onsite, restricting the use of Village Creek, and removal/disposal of drums and a 3-year monitoring period.

Item	Capital Costs	O&M Costs	Present Worth[a]
Remove and Dispose of Drums	$29,000		$ 29,000
Groundwater Monitoring Wells	6,000		6,000
Post Closure Monitoring	0	24,000	60,000
Mobilization, Bonds, and Insurance (3%)	1,000		1,000
Health and Safety (4%)	1,000		1,000
Construction Subtotal	$37,000	$24,000	$97,000
Bid Contingencies (15%)	6,000		6,000
Scope Contingencies (15%)	6,000		6,000
Construction Total	$49,000		
Permitting and Legal (7%)	3,000		3,000
Services during Construction	3,000		3,000
Total Implementation Cost	$55,000		
Engineering Design Cost (10%)	6,000		6,000
Total Cost, Category 4-- LIMITED ACTION			$121,000

[a] Present Worth costs are defined as the sum of the capital costs, present worth of the replacement costs, and the present worth of the annual O&M costs using the facility life indicated, a 30-year replacement cost, and 10 percent interest.

requirements were examined for the closure of hazardous waste landfills and for disposal of excavated contaminants in offsite hazardous waste disposal facilities. The significance of the institutional issues for each alternative is summarized in Table 10.

Contamination at the Cecil Lindsey site appears to result from the disposal of residential/industrial waste and metal salvage debris. There is no reliable evidence to indicate that hazardous waste, in quantities which would pose a significant health threat, were ever disposed of at the site. All applicable institutional issues will be addressed during the implementation of the selected remedial alternative.

The most obvious and pertinent environmental requirements that potentially could impact site remedial actions need to be discussed in more detail. These are RCRA, Executive Orders relating to floodplains (11988) and wetlands (11990), the Offsite Policy, the Clean Water Act (NPDES requirements) and the Safe Drinking Water Act (SDWA).

RCRA

RCRA regulates the treatment, disposal and transportation of hazardous wastes. Alternatives 1-4 are impacted by RCRA.

As regards an appropriate extent of cleanup, when a permitted facility is undergoing a closure action, RCRA requires the removal of contaminated soil to a "safe level" or to background; or a site cap in accordance with RCRA guidance (assuming the applicability of the landfill closure regulations). Contaminated groundwater needs to be cleaned up to either background levels, drinking water standards (Maximum Contaminant Levels (MCL's) - 40 CFR 269.94), or an Alternate Concentration Limit (ACL).

Alternative 1 complies with all aspects of RCRA. The soil and groundwater is being cleaned to background and the contaminated material, including the site drums, would be manifested to a RCRA approved disposal facility. (In general, all superfund wastes are assumed to be hazardous and are normally sent to a licensed/ approved RCRA disposal facility.) All applicable post-closure groundwater monitoring requirements will be adhered to.

Alternative 2 proposes a clay cap instead of excavation, but the cap does not meet RCRA guidance. RCRA suggests a multi-layered cap, whereas Alternative 2 has a single layered clay cap. 40 CFR 264.310 (Closure and post-closure care) stipulates that a final cover must be designed and constructed to: minimize infiltration, function with minimum maintenance, promote drainage and minimize erosion, accommodate subsidence, and have a permeability less than or equal to the permeability of any bottom liner system or natural subsoils present. It is EPA's position that any closure cap must meet guidance requirements in order to comply with the specifics and intent of the law.

Concerning the groundwater, this alternative extracts groundwater so as to meet ambient water quality criteria (AWQC) for VOC's. This level of

Table 10
INSTITUTIONAL ISSUES

Regulation	RCRA Offsite	Clay Cap	Multimedia Cap	Limited Action	No Action
DESIGN ISSUES					
RCRA 3005, 40 CFR regulations for HW treated, stored, or disposed onsite	Not required, as soil disposal facility currently RCRA permitted.	Not applicable.	Not applicable.	Not applicable.	Not applicable.
RCRA 3002(5) 40 CFR 262 manifesting HW for transport	Required for transport of soil, drums.	Required for transport of drums.	Required for transport of drums.	Required for transport of drums.	Not applicable.
NEPA requirements for functional equivalency of an EIS and public comment	Environmental screening done in FS. Public comment and response included in ROD process.	Environmental screening done in FS. Public comment and response included in ROD process.	Environmental screening done in FS. Public comment and response included in ROD process.	Environmental screening done in FS. Public comment and response included in ROD process.	Satisfied by FS.
* NPDES, CWA 402, 40 CFR 122 discharges to surface water.	Permit required for discharge of extracted groundwater to White River.	Permit required for discharge of extracted groundwater to White River.	Permit required for discharge of extracted groundwater to White River.	Not applicable.	Not applicable.
CAA 5112; state implementation plan. Emissions of hazardous air pollutants.	No emissions anticipated.	No emissions anticipated.	No emissions anticipated.	Not applicable.	Not applicable.
DOT 49 CFR subchapter C sections 171-174-177 for transport of waste offsite	DOT procedures required for transport of soil, drums.	DOT procedures required for transport of drums.	DOT procedures required for transport of drums.	DOT procedures required for transport of drums.	Not applicable.
CERCLA	Meets goal of protecting human health and the environment.	Meets goal of protecting human health and the environment.	Meets goal of protecting human health and the environment.	Meets goal of protecting human health and the environment.	Does not meet goal of protecting human health and the environment.
National flood insurance act of 1968, 24 CFR 1909	Flood insurance may be necessary for construction undertaken in the floodplain.	Flood insurance may be necessary for construction undertaken in the floodplain.	Flood insurance may be necessary for construction undertaken in the floodplain.	Flood insurance may be necessary for construction undertaken in the floodplain.	Not applicable.
Executive order 11988 and 11990	Construction in the flood plain would require evaluation of potential effects.	Construction in the flood plain would require evaluation of potential effects.	Construction in the flood plain would require evaluation of potential effects.	Construction in the flood plain would require evaluation of potential effects.	Not applicable.
* State NPDES permit	Permit required to discharge extracted groundwater to White River.	Permit required to discharge extracted groundwater to White River.	Permit required to discharge extracted groundwater to White River.	Not applicable.	Not applicable.
State manifesting requirements	Required for transport of soil, drums.	Required for transport of drums.	Required for transport of drums.	Required for transport of drums.	Not applicable.
State hazardous waste facility permit	Not required, as soil disposal facility currently RCRA permitted.	Not applicable.	Not applicable.	Not applicable.	Not applicable.
** State and county well installation and operating permits	Required for groundwater recovery wells.	Required for groundwater recovery wells.	Required for groundwater recovery wells.	Not applicable.	Not applicable.

Table 10
(continued)

Regulation	RCRA Offsite	Clay Cap	Multimedia Cap	Limited Action	No Action
State air discharge requirements	Not applicable.	Not applicable.	Not applicable.	Not applicable.	Not applicable.
Local soil and erosion control ordinances	Required during excavation and backfilling of site.	Required during regrading and capping of site.	Required during regrading and capping of site.	Not applicable.	Not applicable.
**Local construction permits and easements	Required for construction of dewatering and pipeline.	Required for construction of cap and pipeline.	Required for construction of cap and pipeline.	Not applicable.	Not applicable.
Local permits for electrical, fire code, and zoning regulations	Required for construction of dewatering facilities.	Required for construction of cap and pipeline.	Required for construction of cap and pipeline.	Not applicable.	Not applicable.
COORDINATION					
Corps of Engineers	Requires coordination for design and construction.	Requires coordination for design and construction.	Requires coordination for design and construction.	Requires coordination for implementation.	Minimal coordination needed.
AWPCE	Requires agency input and review.	Requires agency input and review.	Requires agency input and review.	Requires agency input and review.	Requires agency input and review.

* Fund-financed removal actions are not required to comply with other Federal, State, and local laws governing the removal activity, including permit requirements.

  Such removal actions shall, however, to the greatest extent practicable considering the exigencies of the circumstances, attain or exceed applicable or relevant and appropriate requirements.

** These permits may be obtained as a courtesy if such procedures do not adversly affect the overall project budget and/or schedule. Reference preceeding statement.

cleanup, for all practicle purposes, complies with RCRA by cleaning up to an MCL or an acceptable ACL. Also, onsite drums that need to be removed will be manifested to a RCRA facility. All applicable post-closure groundwater monitoring requirements will be adhered to.

Alternative 3 complies with all aspects of RCRA. A multi-layered clay cap, in accordance with RCRA guidance, is proposed and the groundwater will be extracted to meet AWQC for VOC's (TTCE) and metals (beryllium).

This level of groundwater cleanup is greater than necessarily required by RCRA regarding metals in that background beryllium levels are naturally higher than AWQC. As before, onsite drums that contain hazardous wastes will be manifested to a RCRA facility. All applicable post-closure groundwater monitoring requirements will be adhered to.

Alternate 4 complies with RCRA, to the extent that this law is applicable. Drums containing hazardous wastes will be manifested to a RCRA approved facility, but beyond this RCRA does not apply. This alternative proposes monitoring the site to determine if any significant public health or environmental risk exists. This is not a removal or closure alternative and, therefore, other aspects of RCRA are not relevant. If at the end of the monitoring period the site is still characterized as posing no significant threat, it will be delisted from the NPL.

RCRA is not applicable for Alternative 5. No removal action or cleanup is proposed for this remedy.

Executive Order 11988 - Floodplains

Executive Order 11988 requires Federal agencies carrying out their responsibilities to take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health and welfare, and to restore and preserve the natural and beneficial values served by floodplains. This includes considering the restoration and perservation of affected lands as natural undeveloped floodplains.

This law is an important consideration in that the site is located completely within the 10 year floodplain of adjacent Village Creek. Alternatives 1-3 could potentially impact the floodplain, but since Alternatives 4 and 5 have little or no construction activities, these will not affect the floodplain.

Alternative 1, complete excavation, will be designed to restore the area to its natural contours, thus complying with the executive order. Alternatives 2 and 3, on the other hand, will at least have some impact on the floodplain due to the proposed caps. These caps will theoretically displace a previous flood storage area, but realistically the actual impact should be negligible. The proposed extent of capped area is relatively small considering the size of the floodplain.

Executive Order 11990 - Protection of Wetlands

Executive Order 11990 requires Federal agencies in carrying out their responsibilities to take action to minimize the destruction, loss or

degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands. The order emphasizes the importance of avoiding undertaking new construction located in wetlands unless there is no practicable alternative.

In the area of the site, Village Creek is essentially a wetlands/swamp area. The creek is no longer confined to a main channel, but consists of several braided segments that are sluggish and shallow.

None of the proposed alternatives should conceivably affect the wetlands area. Any suggested remedial actions will occur on dry land adjacent to Village Creek and not in it. The only activity that may occur would be the closure of a monitoring well that was installed in the swamp. This closure action would be carried out in such a manner as to minimize any adverse affects on the wetlands.

Offsite Policy

All of the action alternatives comply with the Offsite Policy in that waste disposal will occur at an acceptable RCRA disposal facility that meets all policy requirements. In addition, estimated disposal costs were calculated assuming transportation and disposal to an existing acceptable facility.

NPDES

The discharge of any water from the Cecil Lindsey site will meet all applicable NPDES requirements. Alternatives 1-3 envision pumping the site groundwater and discharging it to the White River. The current groundwater quality is such that no permit effluent requirements should be exceeded.

SDWA

In reference to the Safe Drinking Water Act, no primary drinking water standards are exceeded in any onsite groundwater samples. Although the maximum concentration of silver detected in Village Creek adjacent to the site exceeds the primary drinking water standard by .006 mg/L, there is not expected to be any downstream water quality degradation.

RECOMMENDED ALTERNATIVE

According to 40 CFR Part 300.68 (i), the appropriate extent of remedy shall be determined by the lead agency's selection of a cost-effective remedial alternative which effectively mitigates and minimizes threats to and provides adequate protection of public health, welfare, and the environment. Evaluation of the five remedial alternatives leads to the conclusion that a remedy which includes site access restrictions, drum removal, and a groundwater monitoring program is appropriate to protect public health, welfare and the environment.

Table 11 summarizes the environmental and public health effects of each alternative evaluated in detail.

The results of the field investigations have indicated that the low levels of contamination at the Cecil Lindsey site do not create a significant danger to present or future public health or the environment. The site is overgrown and fairly inaccessible. The area is unlikely to ever be developed due to its location in the Village Creek floodplain. The 100 year floodplain is approximately 10 feet above the ground surface. With regard to groundwater, in the area of the site the movement is toward Village Creek. The limited contamination detected in the groundwater is not seen as a potential problem since there are no downgradient users and also since it is expected to dissipate quickly.

Due to these considerations, the selection of any alternative, more extensive than a limited action remedy would not prove cost-effective and appropriate. The proposed remedy for this site is a modified alternative 4. Site access will be restricted, two monitoring wells will be installed, groundwater will be monitored for a period of one year, and all drums that contain hazardous materials will be disposed of at a RCRA approved facility. An accounting of the site drums that need to be removed will occur during the Remedial Design (RD) portion of this study. The drums will be checked with field monitoring equipment, and if appropriate, samples will be taken and sent to a lab for analysis.

The only difference between this action and alternative 4 is the duration of groundwater monitoring. The recommended alternative suggests one year of monitoring as opposed to 3 years at a cost savings of $14,000. It is not considered necessary to monitor beyond one year considering site conditions and the low contaminant concentrations; and even this is a precautionary step. This alternative complies with all applicable/relevant environmental laws.

Upon completion of the one year of monitoring, assuming no significant public health or environmental threat is discovered, the site monitoring wells will be plugged and the site delisted from the NPL per the NCP §300.66(c)(7)(iii) dated November 20, 1985.

After evaluating the investigative findings and health assessments, a no-action alternative appears reasonable. All data to date indicates that the site does not pose any significant public or environmental threat. The Region's rational for proposing the implementation of a "limited action remedy" stems not from the knowledge of an endangerment, but instead is an effort to be as thorough as possible and, if need be, err on the side of conservatism.

Although enforcement files suggest the possibility of a substantial volume of waste at the site, the remedial investigation had difficulty establishing definitive patterns of contamination. The proposed remedy suggests additional monitoring to ensure that the site has been adequately characterized prior to the initiation of delisting procedures.

The proposed action follows the recommendations presented in the CDC Health Assessment.

Table 11

SUMMARY OF ENVIRONMENTAL AND PUBLIC HEALTH EFFECTS BY ALTERNATIVE

Alternative	Beneficial Effects			Adverse Effects	
	Final Environmental Conditions	Improvements of the Biological Environment	Improvements in Human Use Resources	Construction	Land Use
AA-1 (Offsite)	Removal of contaminants in soils and groundwater to safe levels	None	Unlimited site use	Alteration of topography; Potential for increased sediment loading in swamp; Generation of dust; Increased traffic; Potential worker exposure; Removal of present vegetation; Disturbance of wildlife.	Minimal
AA-2 (Clay Cap)	Removal of contaminants in groundwater to meet standards; cap	None	Limited site use	Alteration of topography; Slight generation of dust; Increased traffic; Potential worker exposure; Removal of present vegetation; Disturbance of wildlife.	Slight floodplain impact; Restriction of agricultural use.
AA-3 (Multimedia)	Removal of contaminants in groundwater to exceed standards; cap	None	Limited site use	Slight alteration of topography; Slight generation of dust; Increased traffic; Potential worker exposure; Removal of present vegetation; Disturbance of wildlife.	Slight floodplain impact; Restriction of agricultural use.
AA-4 (Limited)	No change	None	Limited site use	None Anticipated	Restriction of future use; Restriction of access; Potential for diminished property value of site.
AA-5 (No Action)	No change	None	No change	None	Potential for diminished property value of site; Potential for contact with contaminated materials.

The Arkansas Department of Pollution Control and Ecology agrees with the Region's proposed remedy. Refer to Appendix C for a copy of their letter of concurrence.

OPERATION AND MAINTENANCE

Operation and maintenance costs can be considered negligible. The alternative calls for all monitoring to be completed within one year, after which time the site will likely be delisted. As per CERCLA Section 104(c)(3) the EPA will be responsible for 90% of all costs, and the State 10%.

The State of Arkansas Senate Bill 478 enacted March 21, 1985, established the State's Hazardous Substance Remedial Action Trust Fund. Effective since April 1, 1986, this fund is the source of the State's share of remedial costs.

Fees are calculated based on the annual volume of hazardous waste generated or accepted. Penalty fees assessed and collected also become part of the Trust Fund.

SCHEDULE

Sign ROD - April 1986
Initiate RD - May 1986
Complete RD - September 1986
Initiate RA - September 1986

FUTURE ACTIONS

The site will be delisted if no additional or significant contamination is detected during groundwater monitoring.

If, however, significant contamination is detected and is considered to pose a threat to public health or the environment, additional steps will be taken as needed.

DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service
Agency for Toxic Substances
and Disease Registry

Memorandum

Date .October 28, 1985

From Acting Director
Office of Health Assessment

Subject Health Assessment, Cecil Lindsey Site, Newport, Arkansas

To Mr. Carl R. Hickam
Public Health Advisor
EPA Region VI

Background

The Cecil Lindsey Site was used for a salvage operations where machinery, automobiles, and scrap metals were collected from 1975 to 1980. Although information is limited, reportedly municipal and some industrial wastes were dumped at this site during this same period. Fifty eight drums believed to contain cleaning or coating materials have been identified. The principal contaminants of concern are beryllium, nickel, lead, and total volatile organics (VOCs). This 5-acre site is located in a 10 year flood plain. Approximately 50 residents are located within a one-mile radius. All private drinking water wells are upgradient from this site. Analyses of water from these wells has not demonstrated contamination levels different from background levels in the region.

ATSDR has been asked to review and evaluate the public health significance of the inorganic chemicals that have been identified at Cecil Lindsey. In addition, we have been requested to review the results of two samples from road fill material that contained elevated levels of lead. This fill material has been brought on-site by an EPA contractor.

Environmental Data

Soil

Surface soil organic contamination appears to be concentrated around the Well No. 5 area. Total VOCs were detected in the shallow soils from 0.001 to 600 ppm (means were not given). Total VOCs were detected in the deep soils from 0.001 to 400 ppm. Toluene, benzene, and 1,1,1-trichloroethane are the primary compounds identified. No VOCs were detected in the background soils sampled.

APPENDIX A

Inorganics of concern were detected in surface soils on-site in the following range of concentrations: beryllium, 0.0 to 1.3 ppm with a mean value of 0.4 ppm; nickel, 0.0 to 191.0 ppm with a mean value of 19.3 ppm; lead 0 to 820 ppm with a mean value of 111 ppm. Background soil levels of beryllium were not appreciably different from those detected on-site. Levels of lead and nickel in soil on-site were above the background soils from this area.

In the dike materials lead levels were measured at 93 to 1392 ppm with a mean value of 367 ppm. Levels of lead from the two road fill samples were 4190 and 4860 ppm. Lead levels detected in background soils ranged from 2.4 to 9.7 ppm with a mean value of 6.3 ppm.

Groundwater

Levels of total volatile organics from on-site groundwater monitoring wells ranged from 0 to 0.754 ppm with a mean value of 0.19 ppm. Levels of TTCE, TCE, and vinyl chloride exceed the Proposed Primary Drinking Water Standard and the Clean Water Act's Water Quality Criteria. Benzene levels exceed the Clean Water Act's Water Quality Criteria. These criteria levels were established to provide guidelines for surface water quality. The average VOC content in the background groundwaters was essentially zero.

Maximal beryllium levels on-site (0.0065 ppm) and background beryllium levels (0.0095 ppm) both exceed the Clean Water Act's Water Quality Criteria level of 6.8 ppt (10^{-6}). Maximal nickel levels on-site (0.065 ppm) and background levels 0.077 ppm also exceed the Clean Water Act's Water Quality Criteria level of 0.0154 ppm (10^{-6}).

Surface Water and Sediments

Limited surface water and sediment sampling was conducted at Cecil Lindsey site during this investigation. Sediments were not analyzed for VOCs. Methylene chloride was detected in low levels (0.005 ppm) in Village Creek down gradient and also in background surface water (0.005 ppm), yet there were questions concerning laboratory contamination.

Results of inorganic analyses of sediments show that concentrations of inorganics near the site are consistently higher than the measured background levels. Beryllium detected in the sediment ranged from 0.0 to 0.45 ppm with a mean value of 0.36 ppm. Nickel levels ranged from 0.0 to 9.3 ppm with a mean value of 6.8 ppm. No background levels for beryllium and nickel were provided for sediments. Lead was detected in very low levels (less than 20 ppm) in sediment near the site and in background samples.

Concentrations of beryllium, nickel and lead in background and surface water samples near the site were below the detection limit of the analytical methods or detected in very low levels.

Summary of the Inorganic Contaminants

An evaluation of the data presented for review on the Cecil Lindsey site show contamination of inorganics of both the surface water and the groundwater. Silver was detected in one of seven surface water samples at a concentration of 0.056 ppm. This concentration exceeds both the Primary Drinking Water Standard (0.05 ppm) and the Acceptable Daily Intake (ADI) (0.1 mg/d) for silver. Beryllium was detected in two of seven surface water samples at an average concentration of 0.00307 ppm. This level exceeds the Clean Water Act Criteria for beryllium (6.8 ppt). Beryllium was also found to contaminate two of 13 groundwater samples at a concentration of 0.0065 ppm. Nickel was detected in two of 13 groundwater samples at a maximum concentration of 0.065 ppm which exceeds Clean Water Act Criteria (0.0154). Summary data also indicates elevated off-site concentrations of beryllium (0.0095 ppm) and nickel (0.077 ppm) which cannot be confirmed due to missing data. Lead was detected at an elevated concentration (0.16 ppm) in one of 24 background groundwater samples, but was not appreciably detected in on-site groundwater (<0.018 ppm). High concentrations of lead were found in roadfill samples (>4000 ppm) unrelated to dumping activities at Cecil Lindsey.

The attached toxicology summary is not a thorough review of the literature on nickel, beryllium, lead and silver, but rather a focus on reported effects which have direct relevance for the ultimate evaluation of health risks in man. Primary attention is given to the various media by which the general population comes into contact with the toxicants.

Comments and Recommendations

1. Based on the data reviewed, the Cecil Lindsey Site offers no immediate public health threat to the surrounding community.

2. Although the groundwater on-site was found to contain low levels of VOCs and inorganics, no people are currently drinking contaminated water. The potential for off-site migration of contaminants exists; therefore, groundwater movement needs to be monitored carefully. The materials reviewed indicate that all existing private and public wells are up gradient and that a reversal of groundwater flow is highly unlikely.

3. Public access to this site should continue to be restricted to reduce direct contact with the contaminants on-site.

4. Following further characterization of containerized wastes on-site, the drums of material may need to be removed and, if required, placed in a secured hazardous waste landfill.

5. The road fill material containing greater than 4000 ppm of lead could represent a potential health concern to site workers if roadway dust were released during clean up operations. If the fill material is in a solid matrix, as indicated in discussions with EPA and the results of the EP toxicity test show insignificant levels of lead in the leachate, no significant risk to the community would be present.

We hope this information is useful to you. Please call me (FTS 236-4551) if you have any questions.

Stephen Margolis

Stephen Margolis, Ph.D.

Attachment

Documents Reviewed

1. Superfund Record of Communication, September 3, 1985, 10 A.M., from Carl Hickam, ATSDR Field Representative, Region VI, Cecil Lindsey Site.

2. Superfund Record of Communication, September 3, 1985, 3:30 P.M., from Carl Hickam, ATSDR Field Representative, Region VI, Cecil Lindsey Site, attachments environmental summary and site map with suggested actions.

3. Superfund Record of Communication, September 6, 1985, 2 P.M.,from Carl Hickam, ATSDR Field Representative, Region VI, Cecil Lindsey Site, attachments analyses of soil from road fill and site map.

4. Remedial Investigation Report for Cecil Lindsey Site Draft No.2, dated July 19,1985, Volume 1 and Volume 2.

5. Draft Feasibility Study Report for Cecil Lindsey Site, dated June 3, 1985, Volume 1 and Volume 2 (General Response Actions).

Attachment

Toxicology Summary for Inorganic Contaminants

Compound - Nickel (Ni), metallic AW = 58.71

Criteria levels:

1. OSHA TWA - 1 mg/cubic meter
2. ADI - 1.5 mg/d
3. Clean Water Act Criteria for the protection of human health - 13.4 ug/l
4. Ambient Water Quality Criteria to protect:
   a. freshwater life - e[0.76 ln(hardness) + 1.06] as a 24h average.
   b. saltwater life - 7.1 ug/l as a 24h average.

Exposure Pathways:

1. Air
   U.S. EPA data in 1976 estimated air nickel averages of 9 ng/cubic meter for urban stations and 2 ng/cubic meter for nonurban stations. Inhalation of nickel fumes, dusts, and mists is the primary route of exposure in the occupational setting.
2. Water
   Nickel is found in most freshwater sources in areas impacted by man (<1 ppb). A survey of 969 U.S. public water supplies from 1969-1970 showed the average value taken at the tap was 4.8 ug/l (max. 75 ug/l).
3. Food
   Primary route of exposure for the general population. In 1975, the NAS estimated the total daily intake of Ni in the food chain to be 300-500 ug (max. 900 ug). The weighted average bioconcentration factor for Ni is calculated to be 47 for all freshwater and estuarine aquatic organisms.
4. Dermal
   External contact with Ni is associated with clinically defined skin disorders.
5. Soil
   Soils normally contain Ni in a wide range of levels, 5-500 ppm, depending upon the site. Serpentine rock may contain as much as 5000 ppm.

Summary of Toxicolgy:

1. Carcinogenecity - Dependent upon the chemical form of Ni, route of exposure, and animal model employed, Ni has been shown to cause various tissue carcinomas.

2-

Epidemiologic data from exposed nickel refinery workers suggests Ni causes cancer of the respiratory tract, specifically the lung and the nasal cavitites (latency period-about 25 yrs). There is no data to suggest that oral ingestion of Ni causes cancer.

2. Allergenecity
   Nickel dermatitis and other dermatologic effects are the most frequently seen toxic reaction to nickel.
3. Systemic
   There are no epidemiologic studies that confirm the systemic toxicity of nickel or its compounds (except Ni[CO]4). Doses of nickel sulfate (0.1 to 0.5 mg/kg for 161 days) have induced myocardial and liver damage. High doses of the soluble salts induce giddiness and nausea. A study by Schoeder and Mitchner (1971) demonstrating adverse reproductive effects in rats chronically treated with 5 ppm Ni in drinking water was used as the LOAEL for determining the ADI.

Compound - Beryllium (Be), metallic AW = 9.013

Criteria levels:

1. OSHA TWA - 2 ug/ cubic meter
2. ADI - 0.038 mg/d
3. Clean Water Act Criteria for the protection of human health - 6.8 ppt (10E-06)
4. Ambient Water Quality Criteria to protect fresh-water life:
   a. Soft water - 11 ug/l
   b. Hard water - 1100 ug/l

Exposure pathways:

The major source of Be in the environment is the combustion of fossil fuels.

1. Air
   The detection of Be in the air is infrequent and usually in trace amounts. The U.S. EPA (1971) found samples collected at 100 stations had a 24h average Be of less than 0.0005 ug/cubic meter.
2. Water
   A study by Kopp and Kroner (1967) reported detection of Be in 5.4% of samples. Analyses of surface, ground, and rain waters have shown that, in general, Be concentrations are well below 1 ug/l.

3-

3. Food
   Be is not found to occur to any significant levels in the food. The weighted average bioconcentration factor for Be is calculated to be 19 for all freshwater and estuarine aquatic organisms.
4. Dermal
   Exposure to soluble Be compounds, primarily confined to an occupational setting, can cause contact dermatitis.

Summary of Toxicology:

1. Carcinogenecity - Lung and bone cancer has been induced by Be in animal experiments via inhalation, intratracheal instillation, or intravenous injection. In general, the more soluble compounds are more effective in producing lung cancer and berylliosis. Evidence from epidemiologic studies is accumulating that strongly links Be exposure from both air and drinking water with cancer.
2. Local effects - The soluble Be salts are cutaneous sensitizers as well as primary irritants. Onset of effects is generally delayed about two weeks from the time of first exposure. Eye irritation and conjunctivitis can occur. Accidental implantation of Be or compounds containing Be may cause granulomatous lesions (hard lesions with a central non-healing area).
3. Systemic effects - Intravenous Be is highly toxic to animals in small doses causing progressive destruction of liver tissue (LD50 - 0.44 mg/kg). The toxicity of Be greatly decreases if ingested (LD50 - 9.7 mg/kg). The lung is the target organ for inhaled Be causing a nonproductive cough, shortness of breath, and weight loss. An intense exposure, although brief, may result in severe chemical pneumonitis with pulmonary edema. Chronic Be disease may have a latent period of 5-10 years and result in a severely disabling disease. A study by Schroeder and Mitchner (1975) showing a small, excess in grossly observed tumors of all sites in male rats continuously exposed to Be at 5 ppm in drinking water was used to derive the Water Quality Criteria and ADI for Be.

4-

Compound - Lead (Pb), metallic AW = 207.21

Criteria levels:

1. OSHA TWA - 0.15 mg/cubic meter
2. OSHA action level for industry - 40 ug/dl (blood lead)
3. Clean Water Act Criteria for the protection of human health - 50 ug/l
4. Ambient Water Quality Criteria to protect freshwater life - e[2.35ln(hardness) -9.48] as a 24h average. Exa. water hardness of 100 mg/l (Ca carbonate) results in a value 3.8 ug/l
5. Primary Drinking Water Standard - 0.05 mg/l

Exposure pathways:

1. Air
   The primary source of ambient air lead is from leaded gasoline. The concentration of airborne lead has been found to range from 0.1 ug/cubic meter in rural areas to as much as 10 ug/ cubic meter in areas of heavy automobile traffic.
2. Water
   Approximately one percent of tapwater samples have been to exceed the current standard of 50 ug/l. The average lead content of water consumed was estimated to be 10 ug/l.
3. Food
   Vegetation grown near heavily travelled roads or near stationary sources of lead can have significant concentrations because of deposited airborne lead. Lead may also be added inadvertently to foods from processing and handling. The contribution of the diet to body burden of lead has been estimated at 200 ug/d for adults.
4. Soil
   Soil and dust that contain lead are important exposure pathways for children. The usual concentration in rocks and soils from natural sources range from 10-30 mg/kg.
   In general, lead concentrations in soil and dust appear to be responsible for elevated lead levels in children when the concentration exceeds 500-1000 ppm.
5. Other sources
   Lead-based paint, lead-glazed pottery

5-

Summary of Toxicology:
Since lead accumulates in the body and is only slowly removed, repeated exposures to small amounts over many months may produce elevated blood lead levels.

1. Hematopoietic effects - The effect of lead on the formation of hemoglobin is considered the 'critical effect' of lead. Elevations in erythrocyte protoporphyrin have been identified in individuals with blood Pb levels significantly below 30 ug/dl. The physiologic significance of minor elevations of erythrocyte protoporphyrin is a matter of controversey.
2. Renal effects - Two distinct effects have been reported to occur in both adults and children. One is reversible proximal tubular damage which is seen mainly with short-term exposures. The other, reduced glomerular function, is generally considered to be of a slow, progressive nature. Evidence is accumulating that the threshold for these effects may be below blood lead levels of 50 ug/dl.
3. Reproductive effects - Lead has been associated with an increased incidence of stillbirths and miscarriages in women working in lead industries. Air lead levels in these industries were modest, 74 ug/cubic meter.
4. Neurobehavioral effects - Lead encephalopathy seen today is rarely from industrial exposures. It occurs in children from the ingestion of lead-containing paints. Data from a growing number of studies indicate that chronic low-level lead exposure is associated with altered neurophysiologic performance in children.

Compound - Silver (Ag), metallic AW = 107.88

Criteria levels:

1. OSHA TWA - 0.01 mg/cubic meter (silver metal and soluble silver compounds)
2. ADI - 0.1 mg/d
3. Primary Drinking Water Standard - 0.05 mg/l (designed to protect from argyria)
4. Ambient Water Quality Criteria to protect:
   a. freshwater life - e[1.72ln(hardness) - 6.52] as a 24h average. Exa. for water hardness = 100 mg/l, the criteria value = 4.1 ug/l
   b. saltwater life - 2.3 ug/l

6-

Exposure pathways:

1. Air
   Silver is generally a very minor constituent in ambient air. Studies have shown a range of concentrations from 0.15-4 ng/cubic meter.
2. Water
   Silver is usually found in extremely low concentrations in the aquatic environment. A study of ten U.S. rivers showed concentrations ranging from 0.092-0.55 ug/l. Sorption and precipitation processes are effective in reducing the concentration of dissolved silver and result in higher levels in the bed sediments.
3. Food
   Silver is a normal trace constituent of many organisms and plants (<1 ppm). The EPA estimates 30 ug/d of silver are added to the body burden by food ingestion. The weighted average bioconcentration factor for Ag is calculated to be 0.5 for all freshwater and estuarine aquatic organisms.
4. Dermal
   There is a risk of argyria from silver-containing topical medicinals.

Summary of Toxicology

1. Carcinogenecity - The connections between human cancers and silver as a causative agent are not sufficiently conclusive.
2. Local effects - The only local effect from metallic silver derives from the implant of small particles in the skin which causes a permanent discoloration (argyria). This condition is not associated with adverse health effects. Both the U.S. standards for drinking water and in the workplace air have been based on a presumed 1g/d minimum dose of silver that has caused argyria. Silver nitrate dusts and solutions are highly corrosive to the skin, eyes, and intestinal tract.
3. Systemic effects - All forms of silver are extremely cumulative once they enter body tissues. Argyrosis of the respiratory tract has been described with symptoms mimicking that of chronic bronchitis. Animal experiments have suggested more subtle effects may be due to silver ingestion; specifically, individuals marginally deficient in Cu, Se, and Vitamin E may have their deficiency symptoms exacerbated by silver ingestion.

APPENDIX B

Appendix B

Cecil Lindsey, Newport, Arkansas
Responsiveness Summary

This community relations responsiveness summary is divided into the following Sections:

Section I. Overview. This section discusses EPA's preferred alternative for remedial action, and the public's response to this alternative.

Section II. Background on Community Involvement and Concerns. This section provides a brief history of community interest and concerns raised during remedial planning activities at the Cecil Lindsey site.

Section III. Summary of Comments Received during the Public Comment Period. Comments are categorized by topics and EPA's responses are provided.

Section IV. Remaining Concerns. This section describes any remaining concerns.

In addition to the above sections, Attachment A is included as part of this responsiveness summary, and it identifies the community relations activities conducted during the remedial response activities at the Cecil Lindsey site.

I. OVERVIEW

At the time of the public comment period, EPA had announced a proposed corrective action of the site. EPA proposed to install two additional monitoring wells bringing the total number of monitoring wells to 16, monitor the groundwater quality at these 16 wells for one year, restrict onsite groundwater use and restrict access to the site. The groundwater and site access restrictions will be reviewed after a one-year period to determine if they need to be continued. The final alternative specified in the Record of Decision (ROD) is the same as the alternative proposed during the public comment period.

Judging from the comments received during the public comment period, the residents and city officials of Newport were in agreement with the remedy and supported EPA's plan of action. The potentially responsible parties did not object to or oppose the remedy.

II. BACKGROUND ON COMMUNITY INVOLVEMENT

Local officials and residents of Newport were not aware of the presence of the Cecil Lindsey site until the National Priorities List (NPL) was published in July 1983. The local paper, Newport Daily Independent, ran a story about the site following publication of the NPL. Neither state, county, nor local officials received any inquiries concerning the site. The newspaper editor also indicated that the article did not appear to generate any local interest. The general public appeared to be unaware of the dump's existence as it is not visible from any public roadway.

No significant concern was raised during on-site discussions regarding the impacts of potential contamination. The interest was access to timely, reliable, and readable information.

III. SUMMARY OF PUBLIC COMMENT RECEIVED DURING THE PUBLIC COMMENT PERIOD

Comments raised during the Cecil Lindsey site public comment period are summarized briefly. The press release announcing the public comment period and public meeting was issued on March 10, 1986. The comment period began on March 24 and ended on April 11, 1986. The public meeting to outline the results of the remedial investigation and feasibility study was held April 3, 1986, at the White River Vocational Institute in Newport. Eleven people registered at the meeting. No written comments or questions were received during the comment period.

During the public meeting however, there were questions regarding the number of drums and their contents.

EPA Response: The large majority of the visible, surface drums were placed on the property by EPA. These drums contain soil displaced by drilling monitoring wells, well development water, and disposable protective clothing, etc.

A complete accounting of the drums associated with the dumping operations has not been conducted. Most of the site drums are in varying stages of degradation and some appear to be buried. All of the drums belonging to EPA will be removed. All the other drums will be field tested and removed if found to contain hazardous waste.

IV. REMAINING PUBLIC CONCERNS

None. All questions were addressed during the public meeting. No written comments or questions were received.

Attachment A

COMMUNITY RELATIONS ACTIVITIES CONDUCTED
AT THE CECIL LINDSEY SITE

Community relations activities conducted at the Cecil Lindsey site to date include the following:

- EPA conducted community interviews with local officials and interested residents in November 1983.
- EPA finalized the community relations plan in April 1984.
- Information repositories were established at the Jackson County Library and Courthouse in April 1984.
- A press release was issued announcing the initiation of the remedial investigation in April 1984.
- EPA released the results of the drinking water samples to the area press in January 1985.
- The Feasibility Study was released for public review and comment in March 1986.
- EPA conducted a pre-meeting briefing with the Mayor, town council, and news media on April 3, 1986.
- EPA held a public meeting at the White River Vocational Institute in Newport to describe the RI/FS reports and to respond to citizens' questions. Eleven people registered at the public meeting on April 3, 1986.
- The transcript of the public meeting was sent to the area repositories on April 9, 1986.
- The public comment period closed on April 11, 1986.

APPENDIX C

52

STATE OF ARKANSAS
DEPARTMENT OF POLLUTION CONTROL AND ECOLOGY
8001 NATIONAL DRIVE P.O. BOX 9583
LITTLE ROCK, ARKANSAS 72209

PHONE: (501) 562-7444

January 29, 1986

Mr. Russell Bartley, Chief
ALONM Remedial Section
EPA Region VI
1201 Elm Street
Dallas, TX 75270

RE: Proposed Remedial Action at
Cecil Lindsey Superfund Site

Dear Mr. Bartley:

As I indicated in our recent telephone conversation, the Arkansas Department of Pollution Control and Ecology is in concurrence with the concept of EPA's proposed remedial action for the referenced site embodied in your letter of January 10, 1986.

State funds necessary to match such an action would come from the newly inacted Remedial Action Trust Fund (Act 479 of 1985). This Act requires the Commission on Pollution Control and Ecology to establish priorities for the utilization of this fund. It is derived from some general revenue, a tax on waste generated and from penalties. The waste end tax only became applicable on January 1, 1986. It is anticipated that a list for funding will not be in place until late 1986.

Neither the FIT team waste nor the foundry slag material is considered by the Department to constitute eligible costs as intended by the State Act. Therefore, no state matching funds will be available for their disposal.

In addition, there should be some plan for closure of the monitoring wells after the one-year study period as the State will have no funds to continue surveillance.

Sincerely,

Robert E. Blanz, Ph.D., P.E.
Deputy Director

REB/ie

cc: John Ward

JAN 10 1986

Robert E. Blanz, Ph.D., P.E.
Deputy Director
Program Operations
Arkansas Department of Pollution
Control and Ecology
P.O. Box 9583
Little Rock, Arkansas 72209

Re: Proposed Remedial Action at the Cecil Lindsey Superfund Site

Dear Mr. Blanz:

As per our phone conversations on January 2nd and 6th, 1986, I have outlined below this Agency's proposed remedial action for the Cecil Lindsey site. The alternative selected is a limited action remedy and your written concurrence is requested before we go out to public notice.

Proposed Remedy	Cost
- Deed and access restrictions	-
- Remove drums that contain hazardous materials	$30,000
- Installation of two monitoring wells	$ 6,000
- GW monitoring for one year - initial sampling	$24,000
- end of year sampling	$22,000 (present worth)
- Total estimated cost	$82,000
- State share (10%)	$ 8,200

These cost estimates do not include any contingencies. In order to be conservative, we will add approximately a 30% contingency to this estimate prior to going out for public review.

The justification for the expenditures is as follows:

- Drum Removal; There are approximately 100 barrels on site, all in varying stages of degradation. Approximately 60% of the drums were monitored with an HNU meter during field investigations (the rest being inaccessible); of these two registered above background and were sampled. One analysis indicated high inorganics (ex; As - 1,240 ppm; Be 988 ppm) and the other was high in organics (Etnyl Benzene - 31,000 ppm).

It is not known how many of the barrels need to be removed. Of those we looked at, only the two sampled were identified as potential problems. The action proposed is to do a more comprehensive screening and removal of the drums found to be a hazard.

- Well Installation; It is proposed to install two new monitoring wells in order to better delineate the limited groundwater contamination. CH2M Hill has identified two locations where they feel monitoring wells should be installed to complete our monitoring network.

- Groundwater Monitoring; we propose two events of groundwater sampling and the reading of water levels on the existing and two new wells. This information would be used to verify our earlier information and to provide a sound basis for delisting.

The EPA believes that this proposed remedial action is both comprehensive and appropriate. Upon completion of the groundwater monitoring, assuming no additional or significant contamination is detected, the site will be delisted. Please note that all expenditures are incurred within one year of the implementation of the remedial action. Because of this the EPA will pay 90%, and the State is only responsible for 10%, of the total cost.

It needs to be pointed out that the removal of the access road constructed at the site of foundry slag material is being considered separately. CH2M Hill will be held responsible for its cleanup and proper disposal. Also being looked at separately from the final remedial action is the removal of all investigation derived wastes (drums, etc.). These items will be taken care of at no cost to the State.

Your written concurrence on our proposal would be appreciated at your earliest convenience. If you have any comments or questions on this please call me at (214) 767-9809.

Sincerely,

Russell Bartley, Chief
ALONE Remedial Section

bcc: Doice Hughes, ADPC&E